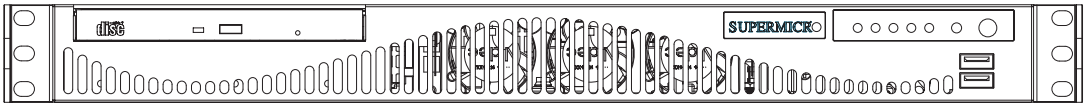
SUPERO®

# SUPERSERVER 6015V-MR
# SUPERSERVER 6015V-MRLP




# USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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# Preface

## About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6015V-MR/ 6015V-MRLP. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 6015V-MR/6015V-MRLP is a dual processor 1U rackmount server based on the SC512F-520/SC512F-280 server chassis and the Super X7DVL-E serverboard. The X7DVL-E supports dual Intel® Xeon® 5100/5000 series processors. Please refer to our web site for updates on supported processors.

## Manual Organization

### Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super X7DVL-E serverboard and the SC512F-520/SC512F-280 chassis.

### Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6015V-MR/6015V-MRLP into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

### Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

### Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6015V-MR/6015V-MRLP.

### Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X7DVL-E serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

### Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC512F-520/SC512F-280 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

### Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

### Appendix A: BIOS POST Messages

### Appendix B: BIOS POST Codes

### Appendix C: Software Installation

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# Chapter 1

# Introduction

## 1-1 Overview

The Supermicro SuperServer 6015V-MR/6015V-MRLP is a dual processor, 1U rack-mount server designed for optimized space efficiency. The 6015V-MR/6015V-MRLP is comprised of two main subsystems: the SC512F-520/SC512F-280 1U chassis and the X7DVL-E serverboard. Please refer to our web site for information on operating systems that have been certified for use with the 6015V-MR/6015V-MRLP.

In addition to the serverboard and chassis, various hardware components may have been included with the 6015V-MR/6015V-MRLP, as listed below.

- Three (3) 4-cm counter-rotating fans, 6015V-MR only (FAN-0087)
- Two (2) 4-cm counter-rotating fans, 6015V-MRLP only (FAN-0087)
- One (1) slim DVD-ROM drive (DVM-PNSC-824(B))
- One (1) air shroud, 6015V-MR only (MCP-310-0007-01)
- One (1) air shroud 6015V-MRLP only (MCP-310-00012-01)
- Serial ATA (SATA) Accessories:
  One (1) SATA cable (CBL-0061)
  Two (2) SATA drive carriers (CSE-PT10 (B))
- One (1) 64-bit PCI-X slot riser card (CSE-RR1U-X)
- One (1) CD containing drivers and utilities
- SuperServer 6015V-MR/6015V-MRLP User's Manual

Optional:

- Rackmount hardware with screws (MCP-290-00004-03):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails in a rack/telco rack

Note: "B" indicates black.

## 1-2 Serverboard Features

At the heart of the SuperServer 6015V-MR/6015V-MRLP lies the X7DVL-E, a dual processor serverboard based upon Intel's 5000V chipset. Below are the main features of the X7DVL-E.

### Processor

The X7DVL-E has two LGA 771-pin sockets to support two Dual-Core Intel Xeon 5100/5000 series processors. Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/support/).

### Memory

The X7DVL-E has six (6) 240-pin DIMM sockets that can support up to 16 GB of ECC FBD (Fully Buffered DIMM) DDR2-667/533 SDRAM. The X7DVL-E's dual-channel memory bus requires modules to be populated in pairs. All memory modules must be the same size and speed.

### Serial ATA

A Serial ATA controller is incorporated into the ESB2 (South Bridge) portion of the 5000V chipset. One internal SATA hard drive is supported in the 6015V-MR/6015V-MRLP.

### PCI Expansion Slots

The X7DVL-E has one x8 PCI-Express slot, one x4 PCI-Express x4 slot, two 64-bit 133/100 MHz PCI-X slots and two 32-bit PCI slots. One riser card is included with the system to support a single add-on card in a 64-bit 133/100 MHz PCI slot (see Chapter 5 for details).

### Ethernet Ports

An Ethernet controller is integrated into the ESB2 to support two Gigabit LAN (Ethernet) ports.

### Onboard Controllers/Ports

An onboard IDE controller supports one floppy drive and up to four Ultra ATA 100 hard drives or ATAPI devices. Onboard I/O backpanel ports include one COM port,

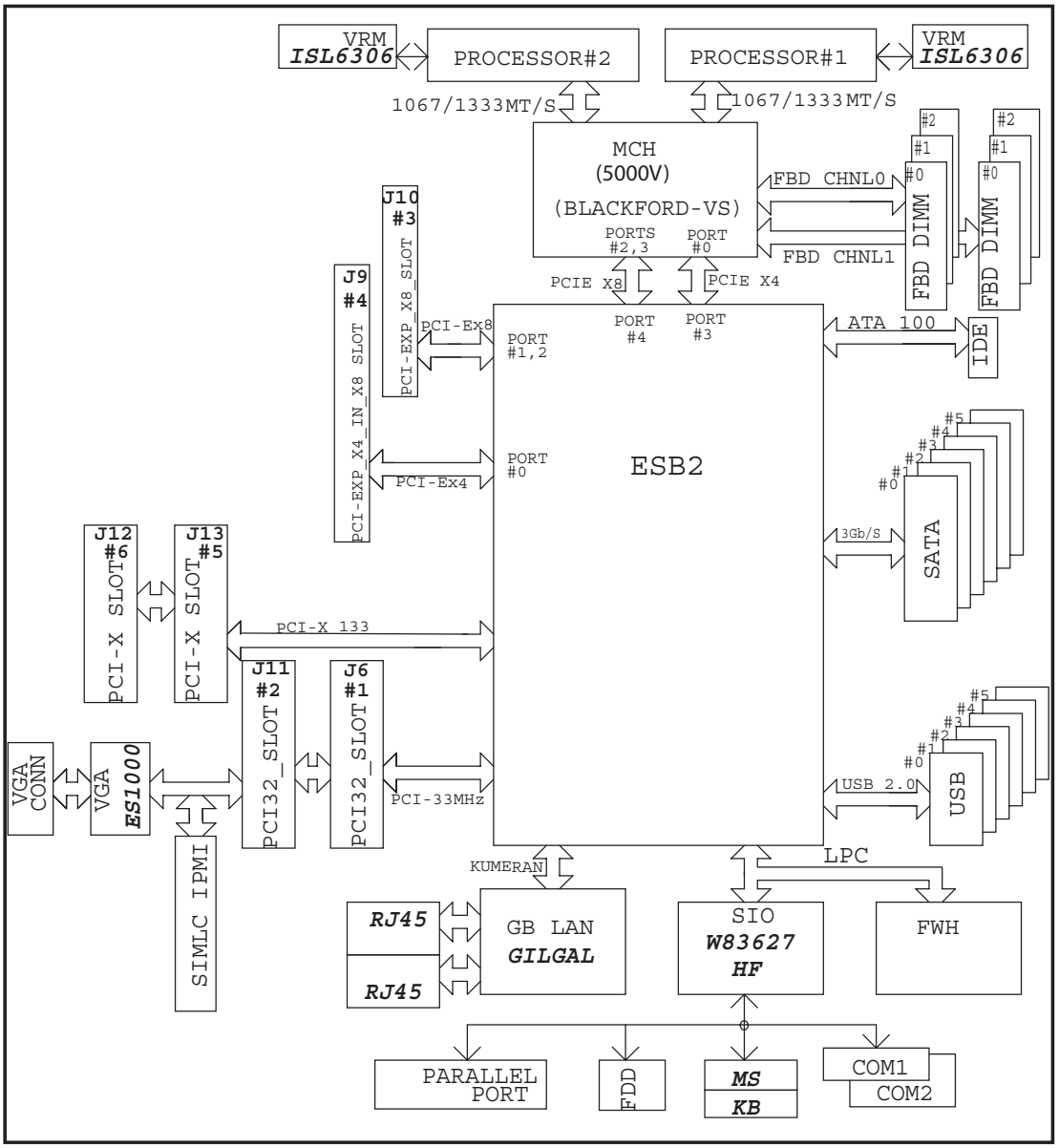
two USB ports, PS/2 mouse and keyboard ports, a graphics (monitor) port and two Gigabit LAN (NIC) ports.

## Other Features

Other onboard features that promote system health include voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

**Figure 1-1. Intel 5000V Chipset: System Block Diagram**

**Note:** This is a general block diagram. Please see Chapter 5 for details.



## 1-3 Server Chassis Features

The SuperServer 6015V-MR/6015V-MRLP is built on the SC512F-520/SC512F-280 1U rackmount server chassis. The following is a general outline of the main features of the SC512F-520/SC512F-280 chassis.

### System Power

When configured as the SuperServer 6015V-MR/6015V-MRLP, the SC512F-520/SC512F-280 chassis features a single power supply.

### Serial ATA Subsystem

The SC512F-520 (6015V-MR) chassis is designed to support one internal Serial ATA hard drive and the SC512F-280 (6015V-MRLP) chassis is designed to support two internal Serial ATA hard drives. The internal Serial ATA drives are not hot-swappable.

### Control Panel

The SC512F-520/SC512F-280's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity, overheat warning and fan failure. The control panel also includes a main power button and a reset button.

### Rear I/O Panel

The rear I/O panel on the SC512F-520/SC512F-280 provides one PCI expansion card slot, one COM port (another is internal), two USB ports, PS/2 mouse and keyboard ports, a VGA (graphics) port and two Gb Ethernet ports. (See Chapter 6 for diagram.)

### Cooling System

The SC512F-520/SC512F-280 chassis has an innovative cooling design that features an air shroud and 4-cm counter-rotating fans with user-defined fan speed control. The SC512F-520 (6015V-MR) has three and the SC512F-280 (6015V-MRLP) has two of these counter-rotating fans. (Fan speed may be defined with a BIOS setting.)

## 1-4 Contacting Supermicro

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Technical Support:
Email: support@supermicro.com.tw
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# Notes

# Chapter 2

# Server Installation

## 2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 6015V-MR/6015V-MRLP up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. This quick setup assumes that your 6015V-MR/6015V-MRLP system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a serverboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

## 2-2 Unpacking the System

You should inspect the box the SuperServer 6015V-MR/6015V-MRLP was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 6015V-MR/6015V-MRLP. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

## 2-3 Preparing for Setup

The SuperServer 6015V-MR/6015V-MRLP does not ship with a rack rail hardware package as the system can be rack mounted without the use of rails. An optional rack rail package is available if you wish to order from Supermicro. Follow the steps in the order given to complete the installation process in a minimal amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

## Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

## Warnings and Precautions!

## Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In a single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

## Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot plug Serial ATA drive to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## Rack Mounting Considerations

### Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

### Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

### Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

### Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

### Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

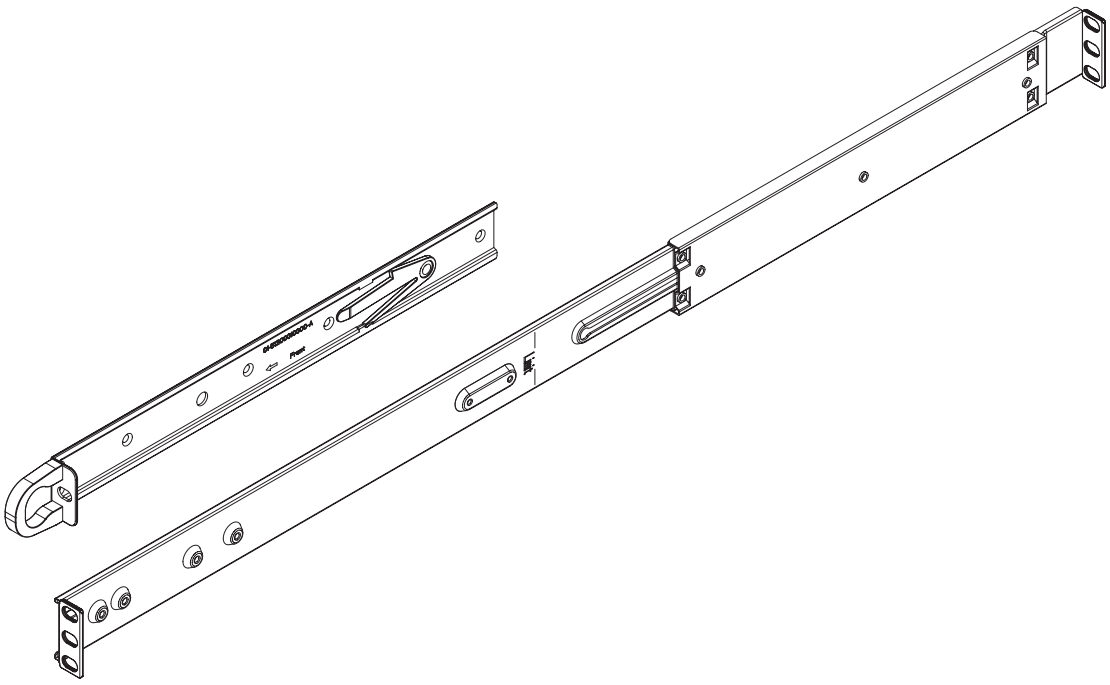
## 2-4 Installing the System into a Rack
### (Rack hardware optional)

This section provides information on installing the SuperServer 6015V-MR/6015V-MRLP into a rack unit. If the system has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6.

### Basic Installation Procedure

The 6015V-MR/6015V-MRLP server comes with two rack mounting brackets, which are located on each side at the front of the chassis. To mount the system into a rack, simply screw these brackets directly to the front of the rack (two screws for each bracket). As Figure 2-1 shows, the brackets can be located at the front of the chassis (left figure) or moved approximately one-third to the rear of the chassis (right figure).

**Figure 2-1. Identifying the Sections of the Rack Rails**



## Installing with Rackmount Kit

This section is only for customers that have the optional rack mount kit (MCP-290-00004-03). Each of these assemblies consist of two sections: an inner rail that secures to the chassis and an outer rail that secures directly to the rack itself (see Figure 2-1). This is a guideline for installing the unit into a rack with the optional rack kit. You should also refer to the installation instructions that came with the rack unit you are using. Be aware that there are a variety of rack units on the market, which may mean the assembly procedure will differ slightly.

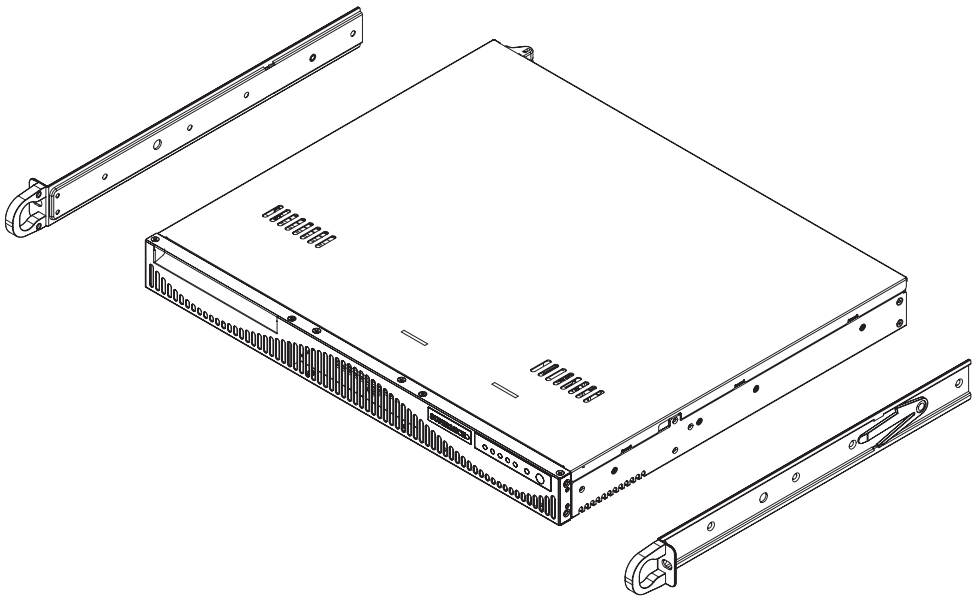
### Installing the Chassis Rails

The two rail sections must be detached from each other prior to installation. Do this by depressing the locking tab on the inner rail to release it from its locked position then pull the two rails completely apart. Do this for both the left and right side rack rail assemblies.

Position the fixed chassis rail sections you just removed along the side of the chassis making sure the three screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-2). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

**Locking Tabs:** Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

**Figure 2-2. Installing Chassis Rails**



## Installing the Rack Rails

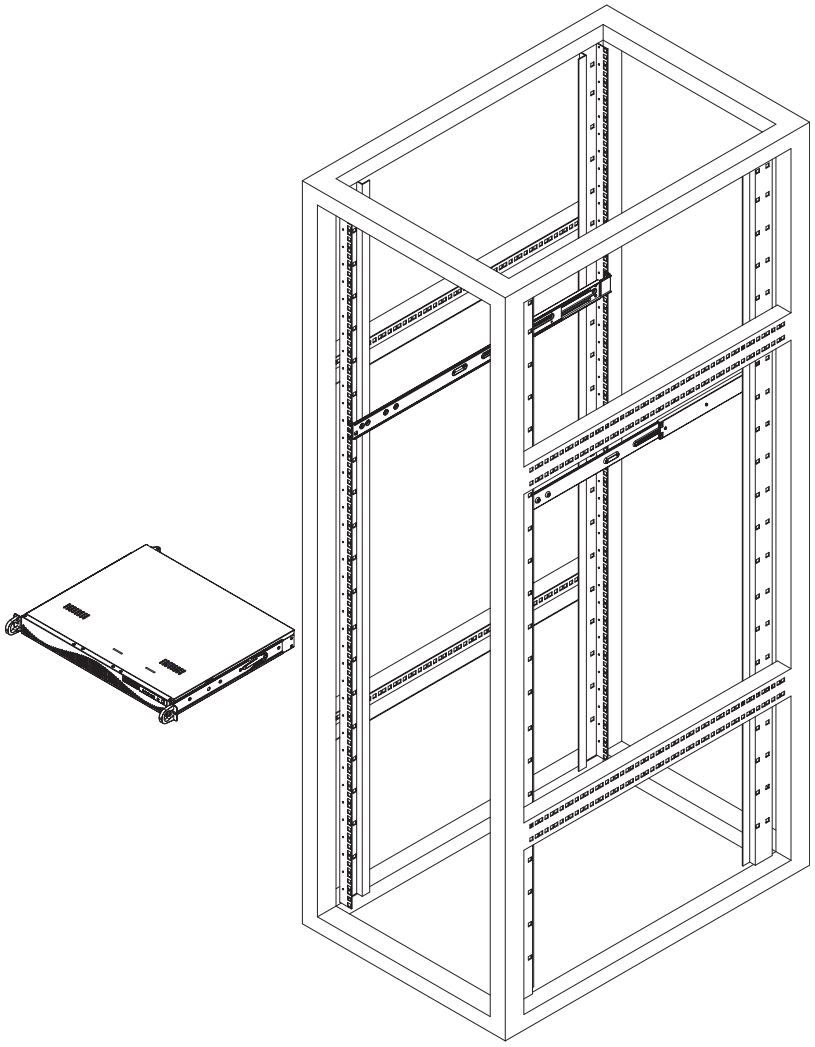
Determine where you want to place the 6015V-MR/6015V-MRLP in the rack (see Rack and Server Precautions in Section 2-3). Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

## Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

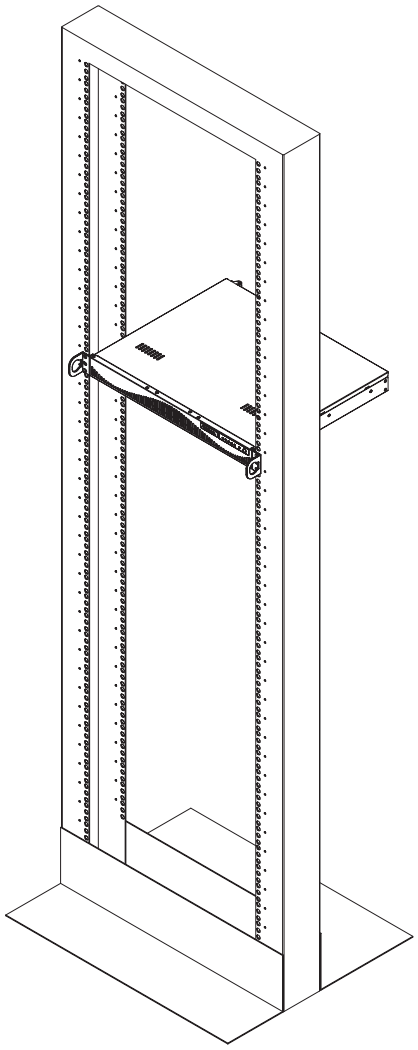
**Figure 2-3. Installing the Server into a Rack (w/ Optional Rackmount Kit)**



## Installing the Server into a Telco Rack

If you are installing the SuperServer 6015V-MR/6015V-MRLP into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accomodate the width of the telco rack.

**Figure 2-4. Installing the Server into a Telco Rack**



## 2-5 Checking the Serverboard Setup

After you install the 6015V-MR/6015V-MRLP in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

**1. Accessing the inside of the server (Figure 2-6)**

First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Then, remove the screws from the rear lip of the chassis top cover (see Figure 2-5 for location). Next, release the top cover by pushing the cover

away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. **Check the CPU (processor)**
   You may have processors already installed into the serverboard. The processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. **Check the system memory**
   Your 6015V-MR/6015V-MRLP server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

4. **Installing add-on cards**
   If desired, you can install an add-on card to the system. See Chapter 5 for details on installing a PCI add-on card.

5. **Check all cable connections and airflow**
   Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections. Also, check that the air shroud is properly installed.

## 2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the Serial ATA drive have been properly installed and all essential connections have been made.

**1. Accessing the drive bays**

For servicing the Serial ATA, DVD-ROM and floppy drives, you will need to remove the top chassis cover. The Serial ATA disk drive is located at the front of the chassis' interior.

**2. Installing a DVD-ROM and floppy disk drives**

Refer to Chapter 6 if you need to reinstall a DVD-ROM and/or floppy disk drive to the system.

**3. Check the Serial ATA disk drive**

Depending upon your system's configuration, your system may have a Serial ATA hard drive already installed. If you need to install a Serial ATA hard drive, please refer to the appropriate section in Chapter 6.

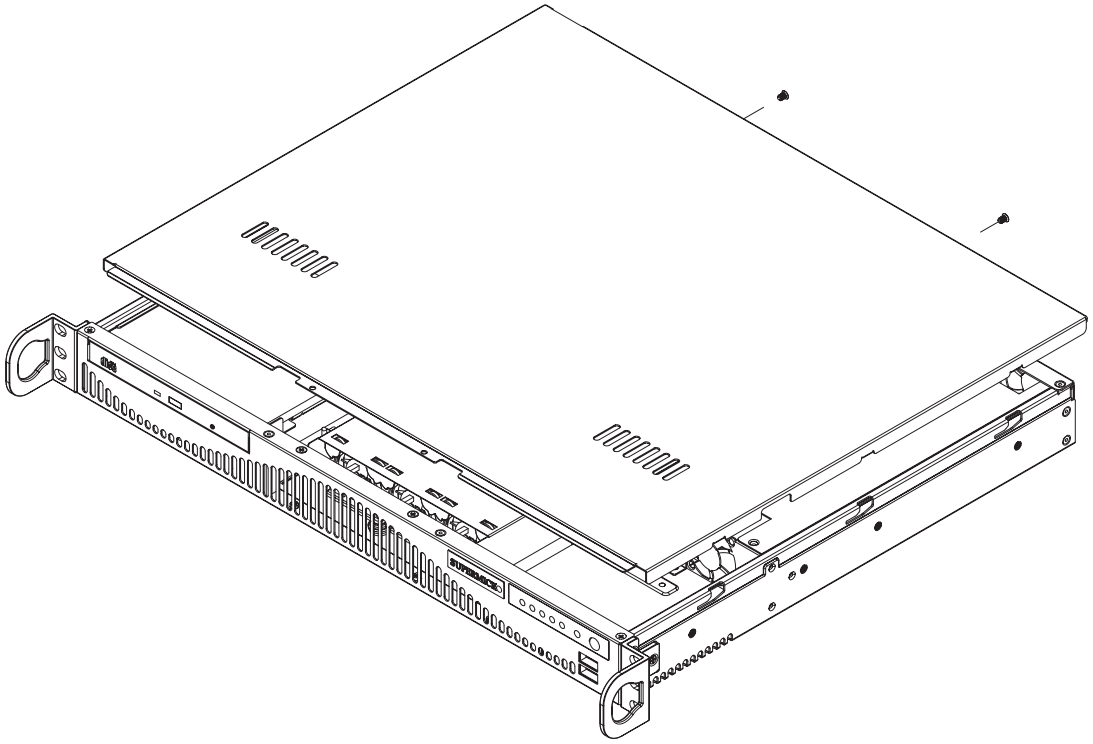
**4. Check the airflow**

Airflow is provided by sets of 4-cm counter-rotating fans. The system component layout was carefully designed to promote sufficient airflow through the small 1U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fan.

**5. Supplying power to the system**

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

**Figure 2-6. Accessing the Inside of the Server**



# Notes

# Chapter 3

# System Interface

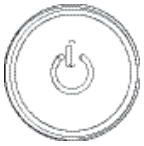
## 3-1 Overview

There are several LEDs on the control panel to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

## 3-2 Control Panel Buttons

There are two push buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.


- **Reset:** The reset switch reboots the system.



- **Power:** This is the main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

## 3-3 Control Panel LEDs

The control panel located on the front of the SC512F-520/SC512F-280 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Overheat/Fan Fail:** When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the overheat condition exists.

- **NIC2:** Indicates network activity on LAN2 when flashing .

- **NIC1:** Indicates network activity on LAN1 when flashing.

- **HDD:** Channel activity for HDDs. This light indicates IDE drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

# Notes

# Chapter 4

# System Safety

## 4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 6015V-MR/6015V-MRLP from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and hard drives. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

## 4-2 General Safety Precautions


Follow these rules to ensure general safety:

- Keep the area around the server clean and free of clutter.

- The 6015V-MR/6015V-MRLP weighs approximately 18 lbs (8.2 kg.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

## 4-3 ESD Precautions

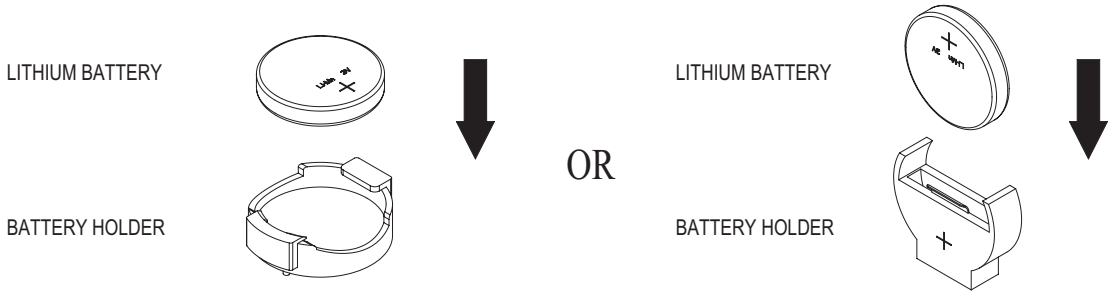
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

## 4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 6015V-MR/6015V-MRLP is operating to assure proper cooling. Out of warranty damage to the 6015V-MR/6015V-MRLP system can occur if this practice is not strictly followed.

**Figure 4-1. Installing the Onboard Battery**



# Chapter 5

# Advanced Serverboard Setup

This chapter covers the steps required to install processors and heatsinks to the X7DVL-E serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system sufficiently.

## 5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

### Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

## 5-2 Processor and Heatsink Installation

*When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the serverboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.*

**IMPORTANT!** Always connect the power cord last and remove it first before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket *before* you install the heatsink and fan. The X7DVL-E can support either one or two Xeon 5100/5000 series processors. If installing one processor only, install it into CPU socket #1.

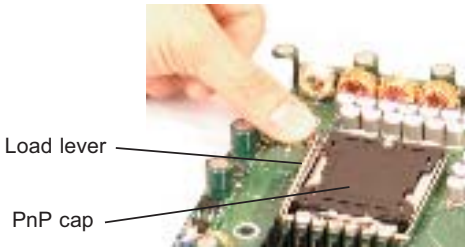
**Notes:**

1. Intel's boxed Xeon CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsinks and fans.

2. When purchasing a 5100/5000 series processor or when receiving a serverboard with one pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

### Installing the LGA 771 Processor

1. A black PnP cap is attached to the load plate to protect the CPU socket. Press the load lever down and away from the retention clasp to release the load plate from its locked position.

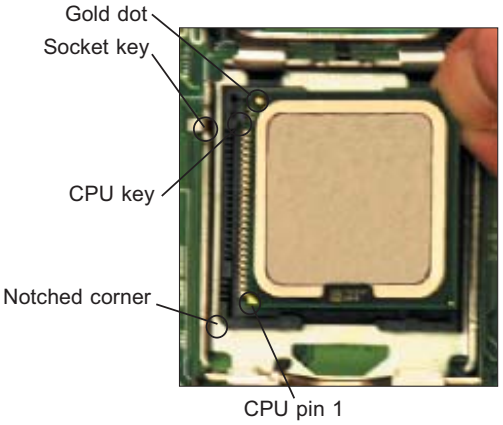



2. Gently lift the load lever to open the load plate.

3. Use your thumb and your index finger to hold the CPU at opposite sides.

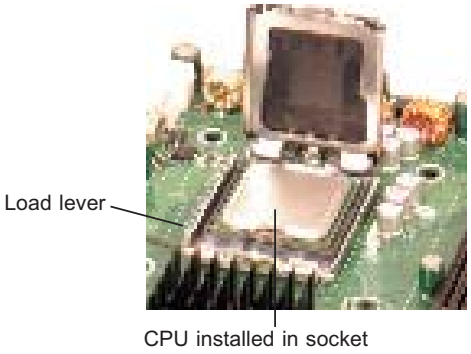
4. Align pin1 of the CPU (the corner marked with a triangle) with the notched corner of the CPU socket.

5. Find the corner of the CPU that has a semi-circle cutout below a gold dot (CPU key). This corner should be aligned with the cutout on the socket (socket key).



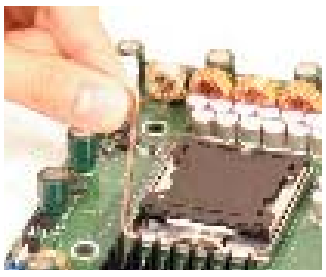

6. Once aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, do not move the CPU horizontally or vertically and do not rub the CPU against any surface or any of the contacts, which may damage the CPU and/or contacts.

7. With the CPU in the socket, inspect the four corners of the CPU to make sure that it is properly installed.

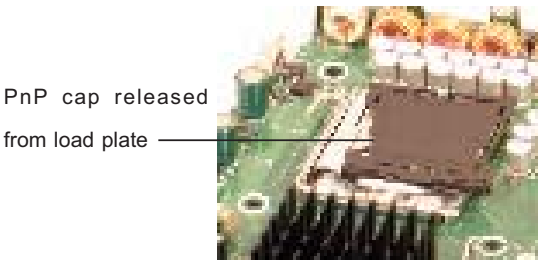



8. Use your thumb to gently push the load lever down until it snaps into the retention clasp.

9. If the CPU is properly installed into the socket, the PnP cap will be automatically released from the load plate when the lever locks. Remove the cap. Repeat steps to install a second CPU if desired.



**Warning!** Keep the plastic PnP cap. The serverboard must be shipped with the PnP cap properly installed to protect the CPU socket. Shipment without the PnP cap properly installed will void the warranty.



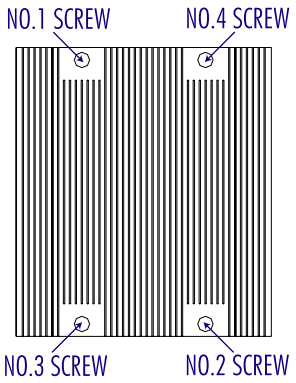
## Installing the Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.

3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)

4. Add the two remaining screws then finish the installation by fully tightening all four screws.




## Removing the Heatsink

**Warning!** We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the serverboard in the sequence as show in the picture above.

2. Hold the heatsink as show in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the CPU is loosened, remove the heatsink from the CPU socket.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

## 5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

### Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their serverboard connector locations noted) should be connected. See the serverboard layout diagram in this chapter for connector locations.

- DVD-ROM drive cable (IDE)
- Serial ATA cable (SATA0)
- Control Panel cable (JF1, see next page)

### Connecting Power Cables

The X7DVL-E has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to the JPW1 connector to supply power to the serverboard. See the Connector Definitions section in this chapter for power connector pin definitions. In addition, your power supply must be connected to the 8-pin processor power connector at JPW3.

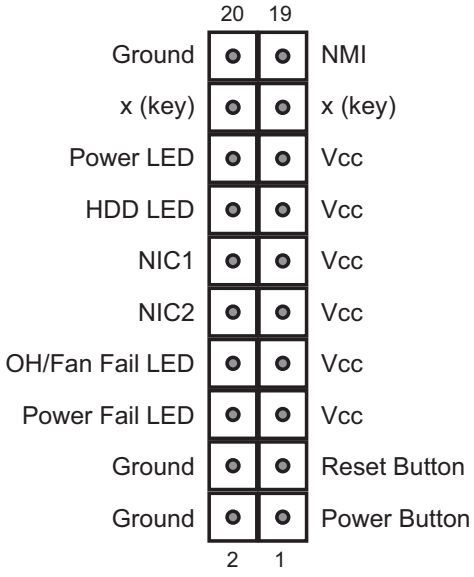
## Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-3 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

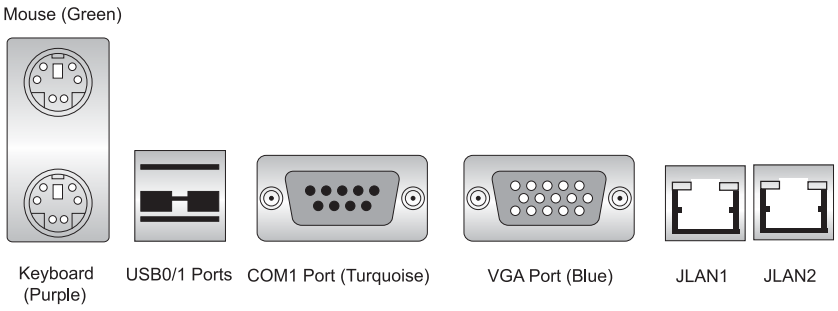
**Figure 5-3. Front Control Panel Header Pins (JF1)**



## 5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-4 below for the colors and locations of the various I/O ports.

**Figure 5-4. Rear Panel I/O Ports**




## 5-5 Installing Memory

**Note:** Check the Supermicro web site for recommended memory modules.

***CAUTION***

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

### DIMM Installation (See Figure 5-5)

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A and DIMM2A. The interleaved memory scheme requires you to install two modules at a time, spread across both banks (first 1A and 2A, then 1B and 2B, etc.).

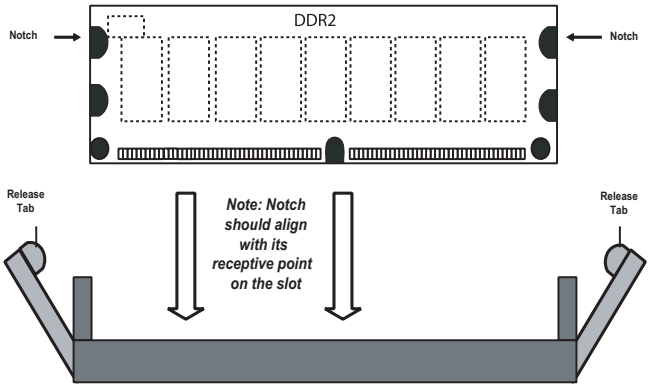
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

**Memory Support**

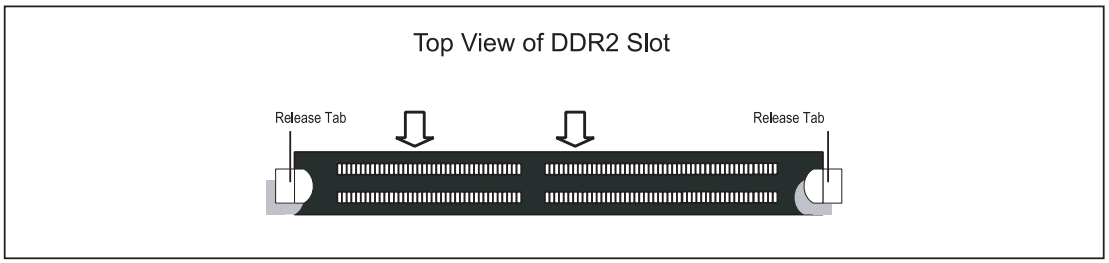
The X7DVL-E supports up to 16 GB of registered ECC FBD DDR2-667/533 memory. You should not mix DIMMs of different sizes and speeds. See Figures 5-5a and 5-5b for installing and removing memory modules.

**Figure 5-5a. Installing DIMM into Slot**




**To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.**
**To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.**

**Figure 5-5b. Top View of DDR2 Slot**




## 5-6 Adding PCI Cards

### 1. PCI slots

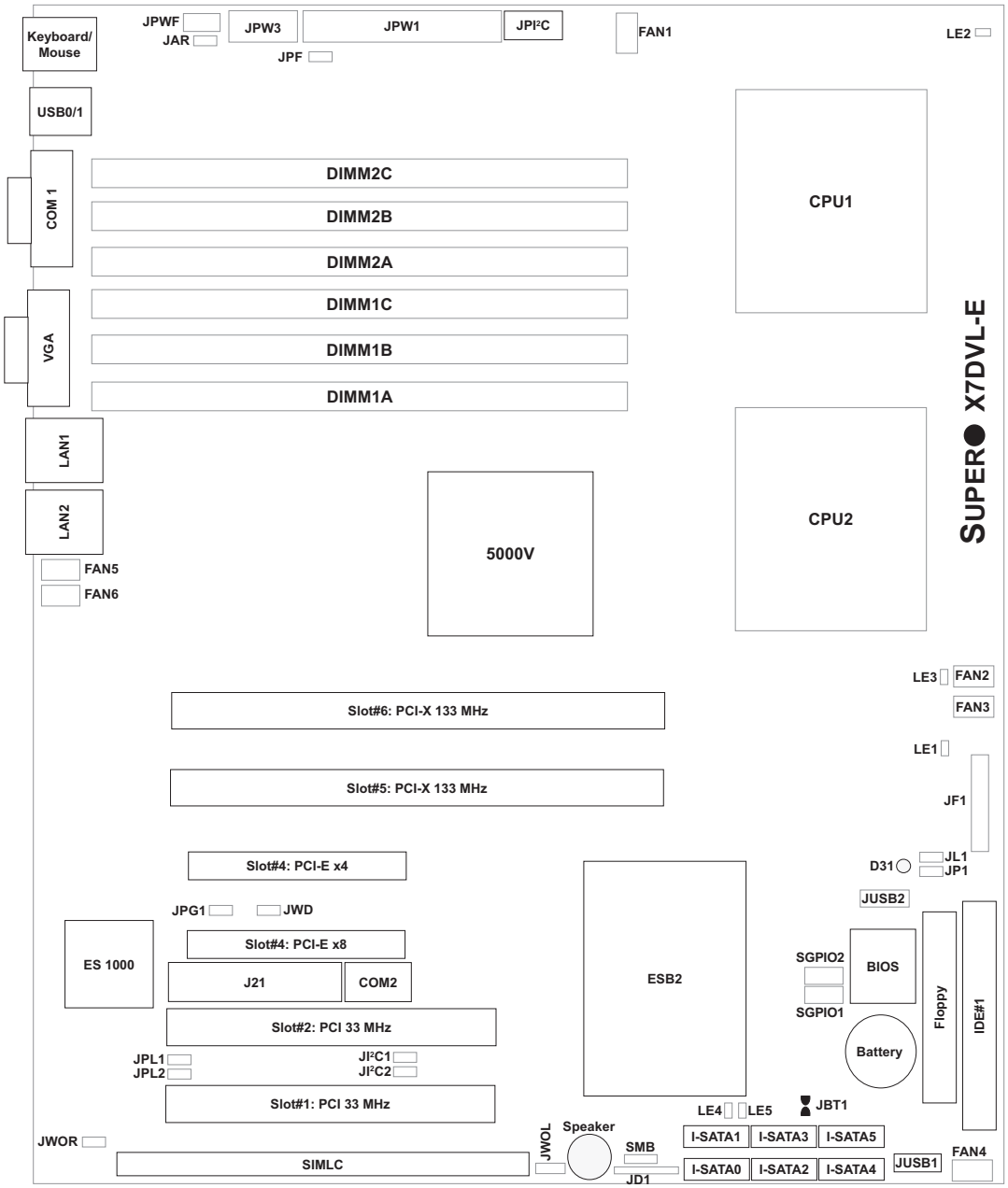
The 6015V-MR/6015V-MRLP includes a CSE-RR1U-X riser card. This riser fits into a 133/100MHz PCI slot to support a full-height, half-length PCI expansion card.

### 2. PCI card installation

Before installing a PCI add-on card, see step 1, above. Begin by swinging out the release tab on the appropriate PCI slot shield. Insert the PCI card into the riser card, pushing down with your thumbs evenly on both sides of the card. Finish by pushing the release tab back to its original (locked) position.

# 5-7 Serverboard Details

**Figure 5-6. SUPER X7DVL-E Layout**
(not drawn to scale)




**Notes:**

**Jumpers not noted are for test purposes only.**

# X7DVL-E Quick Reference

| Jumper | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | See Jumper Section |
| JD1 | Internal /External Speaker Select | Pins 6-7 (Internal) |
| JI²C1/JI²C2 | SMB to PCI Slot#1/Slot#2 Speed | Pins 2-3 (Disabled) |
| JPF | Power Force-On | Open (Disabled) |
| JPG1 | VGA Enable/Disable | Pins 1-2 (Enabled) |
| JPL1/2 | LAN1/2 Enable/Disable | Pins 1-2 (Enabled) |
| JPWF | PWR Supply Failure Detect | Off (Disabled) |
| JWD | Watch Dog | Pins 1-2 (Reset) |

| Connector | Description |
|---|---|
| COM1/COM2 | COM1/COM2 Serial Port/Header |
| FAN 1-6 | System Fan Headers |
| Floppy | Floppy Disk Drive Connector |
| IDE#1 | IDE #1 Hard Disk Drive Connector |
| I-SAT0/I-SATA5 | Serial ATA 0~5 Ports |
| J21 | Parallel (Printer) Port |
| JAR | Alarm Reset Header |
| JD1 | Power LED/SpeakerHeader |
| JF1 | Front Control Panel Connector |
| JL1 | Chassis Intrusion |
| JPF | Power Force-On |
| JPI²C | Power System Management (I²C) Header |
| JPW1 | 24-pin ATX Power Connector |
| JPW3 | 8-pin Processor Power Connector |
| JUSB1 | Universal Serial Bus 2/3 Headers |
| JUSB2 | Universal Serial Bus 4/5 Headers |
| JWOL | Wake-on-LAN Header |
| JWOR | Wake-on-Ring Header |
| LAN1/2 | Gigabit Ethernet Ports |
| SGPIO1/2 | Serial General Purpose Input/Output Headers |
| SIMLC | Low-Profile IPMI SIMM Zero Channel RAID Slot |
| SMB | System Management Bus Header |
| USB0/1 | Universal Serial Bus 0/1 Ports |
| VGA | VGA (Monitor) Port |

| LED Indicator | Description |
|---|---|
| D31 | System Status LED |
| LE1 | Power LED |
| LE4/LE5 | POST Code LED Indicators |

# 5-8 Connector Definitions

## ATX Power Connector

The primary power supply connector meets the SSI (Superset ATX) 24-pin specification. Make sure that the orientation of the connector is correct. See the table on the right for pin definitions.

**ATX Power 24-pin Connector Pin Definitions (JPW1)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 13 | +3.3V | 1 | +3.3V |
| 14 | -12V | 2 | +3.3V |
| 15 | COM | 3 | COM |
| 16 | PS_ON | 4 | +5V |
| 17 | COM | 5 | COM |
| 18 | COM | 6 | +5V |
| 19 | COM | 7 | COM |
| 20 | Res (NC) | 8 | PWR_OK |
| 21 | +5V | 9 | 5VSB |
| 22 | +5V | 10 | +12V |
| 23 | +5V | 11 | +12V |
| 24 | COM | 12 | +3.3V |

## Processor Power Connector

In addition to the Primary ATX power connector (above), the 12v 8-pin processor power connector at JPW3 must also be connected to your power supply. See the table on the right for pin definitions.

**Processor Power Connector Pin Definitions (JPW3)**

| Pins | Definition |
|---|---|
| 1 through 4 | Ground |
| 5 through 8 | +12V |

## NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

**NMI Button Pin Definitions (JF1)**

| Pin# | Definition |
|---|---|
| 19 | Control |
| 20 | Ground |

## Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

**Power LED Pin Definitions (JF1)**

| Pin# | Definition |
|---|---|
| 15 | Vcc |
| 16 | Control |

### HDD LED

The HDD (IDE Hard Disk Drive) LED connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to display disk activity. Refer to the table on the right for pin definitions.

| HDD LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 13 | Vcc |
| 14 | HD Active |

### NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

| NIC1 LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 11 | Vcc |
| 12 | Ground |

### NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

| NIC2 LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 9 | Vcc |
| 10 | Ground |

### Overheat/Fan Fail LED

Connect an LED to pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

| OH/Fan Fail LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 7 | Vcc |
| 8 | HD Active |

### Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions. This only applies to redundant power supplies and so does not apply to the 6014H-T.

| Power Fail LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 5 | Vcc |
| 6 | Ground |

## Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

**Reset Button Pin Definitions (JF1)**

| Pin# | Definition |
|---|---|
| 3 | Reset |
| 4 | Ground |

## Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

**Power Button Pin Definitions (JF1)**

| Pin# | Definition |
|---|---|
| 1 | PW_ON |
| 2 | Ground |

## Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located beside the keyboard/mouse ports. See the table on the right for pin definitions.

**Universal Serial Bus Pin Definitions (USB0/1)**

| USB0 | | USB1 | |
|---|---|---|---|
| Pin # | Definition | Pin # | Definition |
| 1 | +5V | 1 | +5V |
| 2 | PO- | 2 | PO- |
| 3 | PO+ | 3 | PO+ |
| 4 | Ground | 4 | Ground |
| 5 | N/A | 5 | Key |

## Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

**Chassis Intrusion Pin Definitions (JL1)**

| Pin# | Definition |
|---|---|
| 1 | Intrusion Input |
| 2 | Ground |

## Serial Ports

The COM1 serial port is located beside the VGA port. COM2 is a header on the serverboard located near the printer connector (see serverboard layout for location). See the table on the right for pin definitions.

**Serial Port Pin Definitions (COM1/COM2)**

| Pin # | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | 10 | NC |

**Note:** Pin 10 is included on the header but not on the port. NC indicates no connection.

## Fan Headers

The X7DVL-E has six fan headers, designated FAN1 through FAN6. Fan speed is controlled via Thermal Management with a BIOS setting. See the table on the right for pin definitions.

**Fan Header Pin Definitions (Fan1-6)**

| Pin# | Definition |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | Tachometer |
| 4 | PWR Modulation |

## LAN1/2 (Ethernet Ports)

Two Gb Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

## ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse ports are located on the I/O backplane. See the table on the right for pin definitions.

**PS/2 Keyboard and Mouse Port Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Data |
| 2 | NC |
| 3 | Ground |
| 4 | VCC |
| 5 | Clock |
| 6 | NC |

## Extra Universal Serial Bus Headers

Two additional USB headers (JUSB1/ JUSB2) are located near the floppy connector. These may be connected for front side USB access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

**Front Panel Universal Serial Bus Pin Definitions (JUSB1/JUSB2)**

| USB2 | | USB3 | |
|---|---|---|---|
| Pin # | Definition | Pin # | Definition |
| 1 | +5V | 1 | +5V |
| 2 | PO- | 2 | PO- |
| 3 | PO+ | 3 | PO+ |
| 4 | Ground | 4 | Ground |
| 5 | Key | 5 | No connection |

## Alarm Reset

The system will notify you in the event of a power supply failure. This feature assumes that Supermicro redundant power supply units are installed in the chassis. Connect a microswitch to the JAR header to disable the power supply fail alarm.

**Note:** the 6015V-MR/6015V-MRLP has only a single power supply so this header is unused

**Alarm Reset Header (JAR)**

| Pin Setting | Definition |
|---|---|
| Pin 1 | Ground |
| Pin 2 | +5V |

## SGPIO

The two headers labeled SGPIO1 and SGPIO2 are for SGPIO (Serial General Purpose Input/Output). SGPIO provides a bus between the SATA controller and the SATA drive backplane to provide SATA enclosure management functions. Connect the appropriate cables from the backplane to the SGPIO1 and SGPIO2 headers to utilize SAS management functions on your system.

**SGPIO Header Pin Definitions (SGPIO1, SGPIO2)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | NC | 2 | NC |
| 3 | Ground | 4 | Data |
| 5 | Load | 6 | Ground |
| 7 | NC | 8 | NC |

**Note:** NC indicates no connection.

## Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this feature. You must also have a LAN card with a Wake-on-LAN connector and cable.

**Wake-On-LAN Pin Definitions (JWOL)**

| Pin# | Definition |
|---|---|
| 1 | +5V Standby |
| 2 | Ground |
| 3 | Wake-up |

## Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a WOR card and cable to use this feature.

**Wake-On-Ring Pin Definitions (JWOR)**

| Pin# | Definition |
|---|---|
| 1 | Ground (Black) |
| 2 | Wake-up |

## Power SMB Connector

The Power SMB ($JPI^2C$) connector ($JPI^2C$) may be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

**PWR SMB Pin Definitions ($JPI^2C$)**

| Pin# | Definition |
|---|---|
| 1 | Clock |
| 2 | Data |
| 3 | PWR Fail |
| 4 | Ground |
| 5 | +3.3V |

## SMB

A System Management Bus header is designated SMB. Connect the appropriate cable here to utilize SMB on your system.

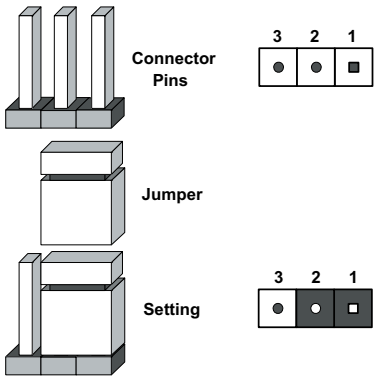
**SMB Header Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Data |
| 2 | Ground |
| 3 | Clock |
| 4 | No Connection |

# 5-9 Jumper Settings

## Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.




**Note 1:** On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

## CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1) First power down the system and unplug the power cord(s)
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver
3) Remove the screwdriver (or shorting device)
4) Reconnect the power cord(s) and power on the system.

**Note:** *Do not use the PW_ON connector to clear CMOS*.

## VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

| VGA Enable/Disable Jumper Settings (JPG1) | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

### LAN1/2 Enable/Disable

Change the setting of jumper JPL1 and JPL2 to enable or disable the LAN1 and LAN2 Gb Ethernet ports, respectively. See the table on the right for jumper settings. The default setting is enabled

| LAN1/2 Enable/Disable Jumper Settings (JPL1/JPL2) | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

### PCI Slots to SMB

Jumpers JI$^2$C1 and JI$^2$C2 allow you to connect or disconnect the PCI slots to the System Management Bus. The default setting is pins 2-3 for both jumpers to disable the connection. Both connectors must be set the same (one is for data and one is for clock). See the table on right for jumper settings.

| PCI Slots to SMB Jumper Settings (JI$^2$C1, JI$^2$C2) | |
|---|---|
| Jumper Setting | Definition |
| Open | Disabled |
| Closed | Enabled |

### Power Force On Enable/ Disable

Jumper JPF allows you to enable or disable the Power Force-On function. If enabled, the power will always stay on automatically. If this function is disabled (the normal setting), the user needs to press the power button to power on the system.

| Power Force On Enable/Disable Jumper Settings (JPF) | |
|---|---|
| Jumper Setting | Definition |
| Open | Normal |
| Closed | Force On |

### PWR Supply Failure Detect

The system can notify you in the event of a power supply failure. This feature is available when three power supply units are installed in the chassis with one acting as a backup. This jumper should remain disabled to prevent false alarms.

| PWR Supply Failure Detect Jumper Settings (JPWF) | |
|---|---|
| Jumper Setting | Definition |
| Closed | Enabled |
| Open | Disabled |

### Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application is "hung up". Pins 1-2 will cause WD to reset the system if an application is hung up. Pins 2-3 will generate a non-maskable interrupt signal for the application that is hung up. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

**Note:** When enabled, the user must write their own application software in order to disable the Watch Dog Timer.

**Watch Dog Jumper Settings (JWD)**

| Jumper Setting | Definition |
|---|---|
| Pins 1-2 | Reset |
| Pins 2-3 | NMI |
| Open | Disabled |

### Power LED/Speaker

On the JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker.

**Note:** The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper.

**Speaker Connector Jumper Settings (JD1)**

| Pin Setting | Definition |
|---|---|
| Pins 6-7 | Internal Speaker |
| Pins 4-7 | External Speaker |

## 5-10 Onboard Indicators

### LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb LAN port, one LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

**LAN LED (Connection Speed Indicator)**

| LED Color | Definition |
|---|---|
| Off | 10 MHz |
| Green | 100 MHz |
| Amber | 1 GHz |

### Onboard Power LED (LE1)

LE1 is an Onboard Power LED. When this LED is lit, it means power is present on the serverboard. Be sure to turn off the system and unplug the power cord before removing or installing components.

### POST Code LED Indicators

There are two POST Code LED Indicators (LE4, LE5) located near the SATA ports. These two LEDs indicate POST (Power On Self Test) Code Messages through different sets of green and yellow light combinations. Refer to the table on the right for POST Code Messages.

| POST Code LED Indicators (LE4, LE5) | | |
|---|---|---|
| LE4 (Yellow) | LE5 (Green) | POST Code |
| On | Off | Memory Initialization @ POST 28h |
| Off | On | System Shadowing @ POST 38h |
| On | On | CPU Initialization @ POST 0Ah |
| Yellow Off | Green: Off | PCI Initialization @ POST 49h |

### System Status LED

D31 is the system status LED, which indicates the status of the system as described in the table on the right.

| System Status LED Indicator (D31) | |
|---|---|
| Color | System Status |
| Green | System on, status normal |
| Yellow | S5 or S4 State |
| Red | PWR on, PWR problem(s) occur(s) or JPW3 not properly installed |

# 5-11 Parallel Port, Floppy, IDE and SATA Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

## Parallel (Printer) Port Connector

The parallel (printer) port connector is located between PCI Slot#2 and PCI Slot#3. See the table on the right for pin definitions.

**Parallel (Printer) Port Connector Pin Definitions (J21)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Strobe- | 2 | Auto Feed- |
| 3 | Data Bit 0 | 4 | Error- |
| 5 | Data Bit 1 | 6 | Init- |
| 7 | Data Bit 2 | 8 | SLCT IN- |
| 9 | Data Bit 3 | 10 | GND |
| 11 | Data Bit 4 | 12 | GND |
| 13 | Data Bit 5 | 14 | GND |
| 15 | Data Bit 6 | 16 | GND |
| 17 | Data Bit 7 | 18 | GND |
| 19 | ACK | 20 | GND |
| 21 | BUSY | 22 | Write Data |
| 23 | PE | 24 | Write Gate |
| 25 | SLCT | 26 | NC |

## Floppy Connector

The floppy connector is designated "Floppy" on the serverboard. See the table on the right for pin definitions.

**Floppy Drive Connector Pin Definitions (Floppy)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Ground | 2 | FDHDIN |
| 3 | Ground | 4 | Reserved |
| 5 | Key | 6 | FDEDIN |
| 7 | Ground | 8 | Index |
| 9 | Ground | 10 | Motor Enable |
| 11 | Ground | 12 | Drive Select B |
| 13 | Ground | 14 | Drive Select B |
| 15 | Ground | 16 | Motor Enable |
| 17 | Ground | 18 | DIR |
| 19 | Ground | 20 | STEP |
| 21 | Ground | 22 | Write Data |
| 23 | Ground | 24 | Write Gate |
| 25 | Ground | 26 | Track 00 |
| 27 | Ground | 28 | Write Protect |
| 29 | Ground | 30 | Read Data |
| 31 | Ground | 32 | Side 1 Select |
| 33 | Ground | 34 | Diskette |

## IDE Connector

There are no jumpers to configure the onboard IDE#1 connector. See the table on the right for pin definitions.

**IDE Drive Connector Pin Definitions (IDE1)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Reset IDE | 2 | Ground |
| 3 | Host Data 7 | 4 | Host Data 8 |
| 5 | Host Data 6 | 6 | Host Data 9 |
| 7 | Host Data 5 | 8 | Host Data 10 |
| 9 | Host Data 4 | 10 | Host Data 11 |
| 11 | Host Data 3 | 12 | Host Data 12 |
| 13 | Host Data 2 | 14 | Host Data 13 |
| 15 | Host Data 1 | 16 | Host Data 14 |
| 17 | Host Data 0 | 18 | Host Data 15 |
| 19 | Ground | 20 | Key |
| 21 | DRQ3 | 22 | Ground |
| 23 | I/O Write | 24 | Ground |
| 25 | I/O Read | 26 | Ground |
| 27 | IOCHRDY | 28 | BALE |
| 29 | DACK3 | 30 | Ground |
| 31 | IRQ14 | 32 | IOCS16 |
| 33 | Addr1 | 34 | Ground |
| 35 | Addr0 | 36 | Addr2 |
| 37 | Chip Select 0 | 38 | Chip Select 1 |
| 39 | Activity | 40 | Ground |

## SATA Ports

There are no jumpers to configure the SATA ports. See the table on the right for pin definitions.

**SATA Port Pin Definitions (I-SATA0, I-SATA5)**

| Pin # | Definition |
|---|---|
| 1 | Ground |
| 2 | TXP |
| 3 | TXN |
| 4 | Ground |
| 5 | RXN |
| 6 | RXP |
| 7 | Ground |

# Notes

# Chapter 6

# Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC512F-520/SC512F-280 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

### Tools Required

The only tool you will need to install components and perform maintainance is a Philips screwdriver.

## 6-1 Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD discharge.

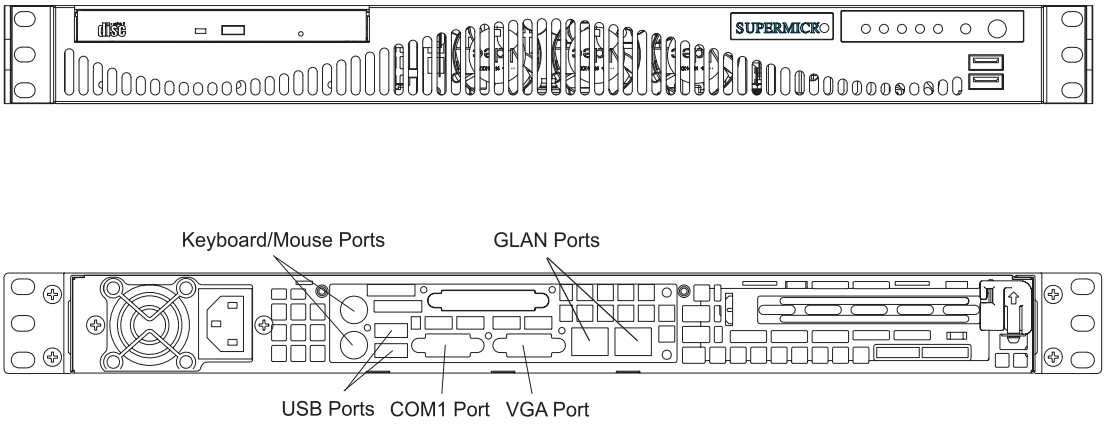
### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

### Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

**Figure 6-1. Chassis Views**




**Note:** the front side USB ports (as shown in the figure above) are included on the 6015V-MR only.

## 6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system control buttons and status indicators. These wires have been bundled together in a ribbon cable to simplify the connection. Connect the cable from JF1 on the serverboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

# 6-3 System Fans

The 6015V-MR/6015V-MRLP employs sets of 4-cm counter-rotating fans to provide cooling (three sets in the 6015V-MR and two sets in the 6015V-MRLP). Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels. These fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by a setting in BIOS (see Chapter 7). Each fan in a set has its own separate tachometer.

It is very important that the chassis top cover is properly installed for the airflow to circulate properly through the chassis and cool the components.

## System Fan Failure

If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will blink on and off. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover while the system is still running to determine which of the two fan units has failed. Then power down the system before replacing a fan. Removing the power cord(s) is also recommended as a safety precaution.

## Replacing System Fans

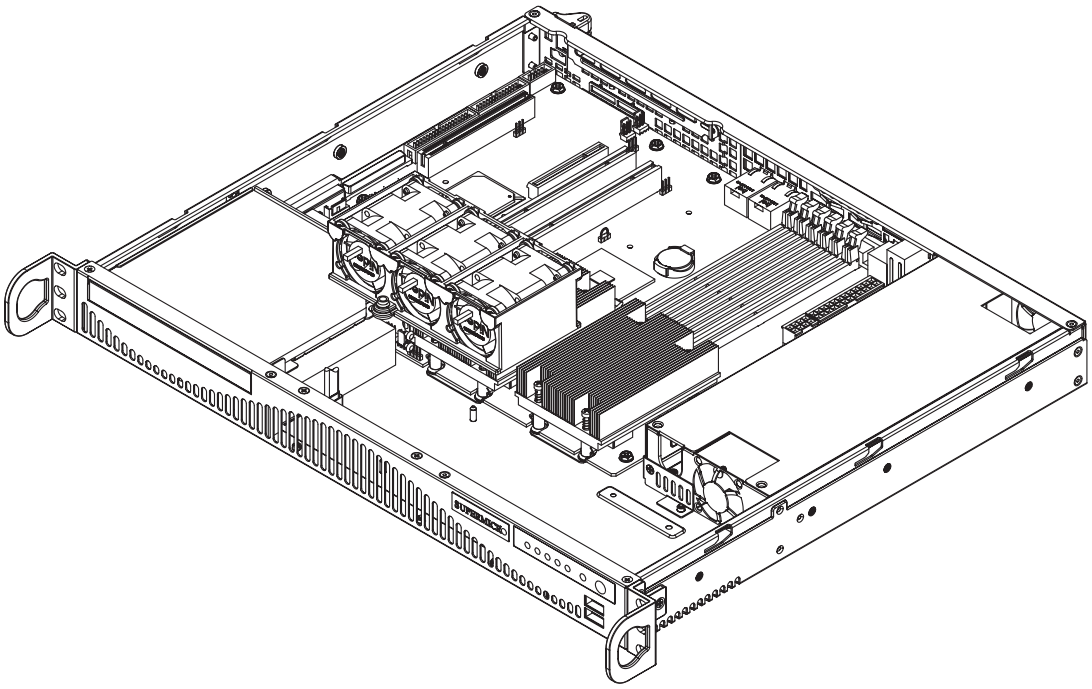
**1. Removing a fan**

With the system powered down, first remove the chassis cover to determine which fan had failed. Grasp the failed fan unit and lift it out of the chassis. See Figure 6-2.

**2. Installing a new fan**

Replace the failed fan with an identical 4-cm, 12 volt fan (available from Supermicro: p/n FAN-0087). Push the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans. Reposition the fan housing back over the two mounting posts in the chassis, then reconnect the fan wires to the same chassis fan headers you removed them from. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

**Figure 6-2. System Cooling Fans (6015V-MR shown)**



## 6-4 Drive Bay Installation/Removal

### Accessing the Drive Bays

DVD-ROM/Serial ATA Drives: For installing or removing the DVD-ROM or Serial ATA drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. **Note:** Only a "slim" DVD-ROM will fit in the 6015V-MR/6015V-MRLP.

### Serial ATA Drive Installation

The SATA drive is not hot-swappable, meaning system power must be turned off before installing or removing.

To install or remove the drive, first power down the system and then remove the top cover of the chassis as described on page 6-7. Unscrew the retention screw at the top center of the drive, then push the drive tray out from the back until you can grasp and pull it out through the front of the chassis. Remove the drive from the drive tray.

To add a new SATA drive, install a drive into the tray with the printed circuit board side facing down and so that the mounting holes align with those in the tray. Secure the drive to the tray with the four screws. Replace the top cover when finished. See Figure 6-3.

Note: the 6015V-MRLP can accommodate two internal SATA hard drives, one on each side of the fans.

## DVD-ROM Drive Installation

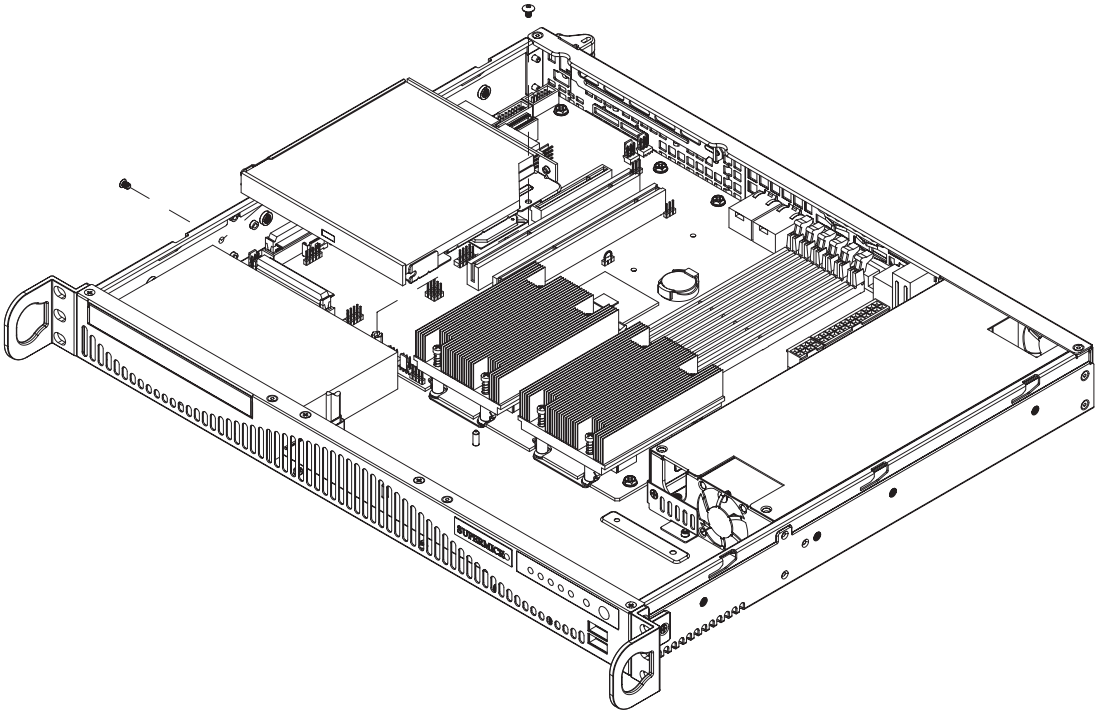
The top cover of the chassis must be opened to gain full access to the DVD-ROM drive bay. The DVD-ROM must have a "slim" profile to fit into the 6015V-MR/6015V-MRLP. If you cannot remove the top cover with the system remaining in the rack, follow the procedure below.

First, shutdown the system and disconnect all cables from the back of the server chassis. Make sure the system is supported from underneath then remove the front bracket screws that secure the unit to the rack. Carefully lift the server out of the rack.

Open the cover by following the procedure described in Section 6-5. You must power down the system before installing or removing DVD-ROM or Serial ATA drives. Remove the screws that secure the DVD-ROM drive to the chassis and then lift the drive out of the chassis. See Figure 6-3.

**Note:** A red mark on a wire typically designates the location of pin 1.

**Figure 6-3. Removing the SATA/DVD-ROM/ Drive**



# 6-5 Power Supply

The 6015V-MR has a single 520 watt power supply and the 6015V-MRLP has a single 280 watt power supply. This power supply has the capability of operating at a 100 or 240 input voltage. You must power down the system and then unplug the AC power cord to completely remove power from the system before removing the power supply.

## Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (see part numbers in Appendix D and contact infomation in Chapter 1).

## Replacing the Power Supply

**1. Accessing the inside of the system**

To replace a power supply, you must first remove the top chassis cover. To do so, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, remove the screws from the lips on either side of the cover then depress the two buttons on the cover to release it. Push the cover away from you then lift it from the chassis to gain full access to the inside of the server.

**2. Removing the power supply**

First unplug the power cord from the system. To remove the failed power unit, remove the two screws on the back of the power supply and a third from the front of the power supply, which secures it to the bottom of the chassis. You can then lift the unit straight out of the chassis. (The power cord should have already been removed.)

**3. Installing a new power supply**

Replace the failed unit with another unit of the same wattage. It is highly recommended to replace it with the exact same power supply. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit and the third at the front. Then reconnect the power cord, replace the chassis top cover and push the unit back into the rack. Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

# Notes

# Chapter 7

# BIOS

## 7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DVL-E. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

### System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS Logic, enabling it to retain system parameters. Each time the computer is powered on the computer is configured with the values stored in the CMOS Logic by the system BIOS, which gains control at boot up.

### How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

### Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

**Warning:** Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

## 7-2 Running Setup

***Default settings are in bold text unless otherwise noted.***

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

**Press the <Delete> key to enter Setup**

## 7-3 Main BIOS Setup

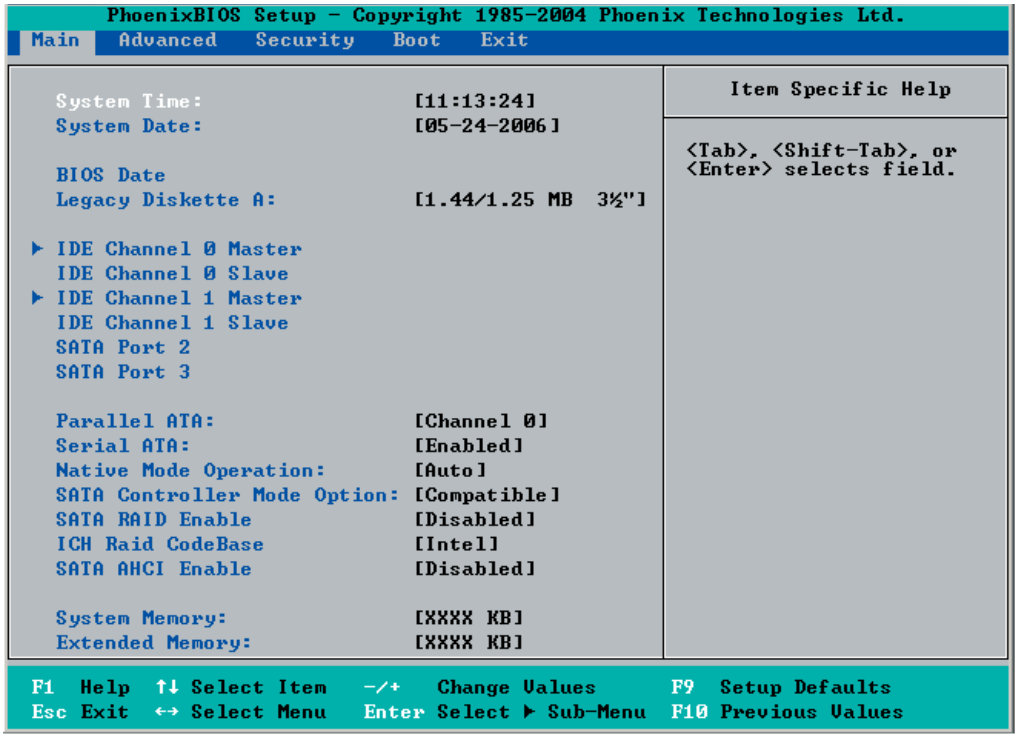
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶ icon. With the item highlighted, press the <Enter> key to access the submenu.

## Main BIOS Setup Menu




## Main Setup Features

### System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

### System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

### BIOS Date

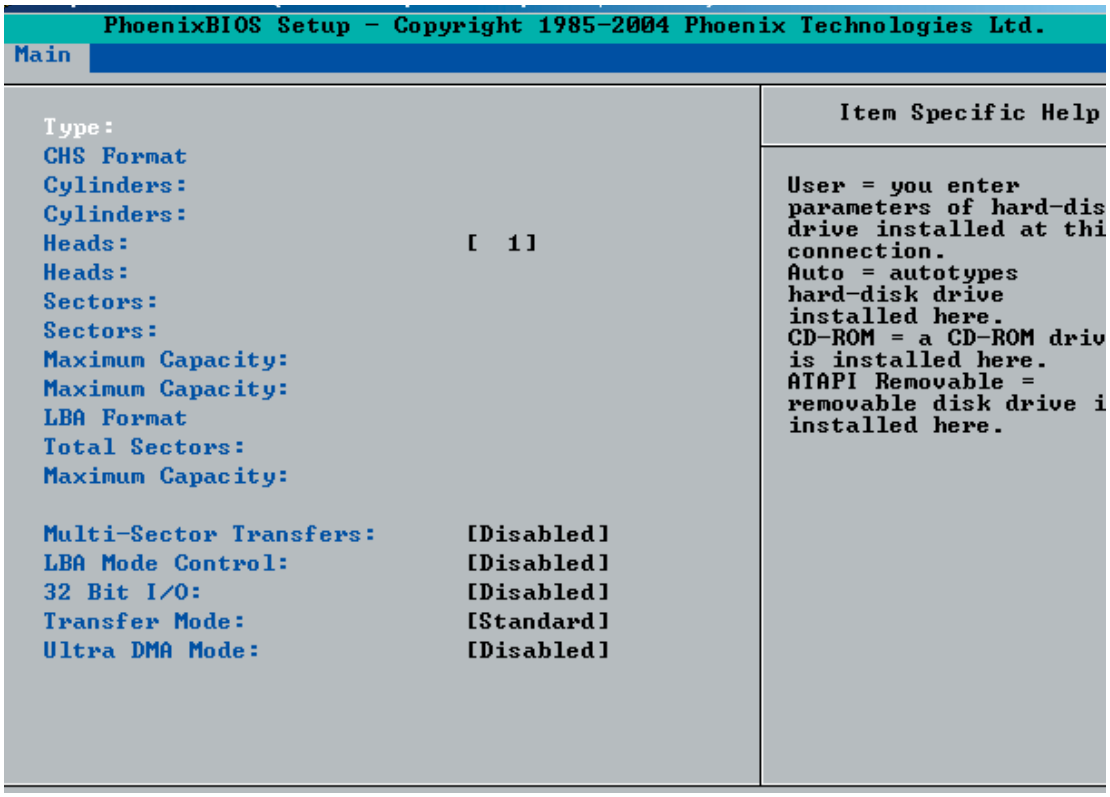
This field displays the date when this version of BIOS was built.

### Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

### ▶IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, SATA Port2 and SATA Port3

These settings allow the user to set the parameters of IDE Channel 0 Master/ Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:




#### Type

Selects the type of IDE hard drive. The options are **Auto**, (which allows the BIOS to automatically determine the hard drive's capacity, number of heads, etc.), a number from 1-39 to select a predetermined type of hard drive, CDROM and ATAPI Removable. The option "User" will allow the user to enter the parameters of the HDD installed at this connection. The option "Auto" will allow the BIOS to automatically configure the parameters of the HDD installed at the connection. Choose the option 1-39 to select a predetermined HDD type. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

### CHS Format

The following items will be displayed by the BIOS:

**Type:** This item displays the type of IDE or SATA Device.

**Cylinders:** This item indicates the status of Cylinders.

**Headers:** This item indicates the number of headers.

**Sectors:** This item displays the number of sectors.

**Maximum Capacity:** This item displays the maximum storage capacity of the system.

### LBA Format

The following items will be displayed by the BIOS:

**Total Sectors:** This item displays the number of total sectors available in the LBA Format.

**Maximum Capacity:** This item displays the maximum capacity in the LBA Format.

### Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

### LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled.**

### 32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

### Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

### Ultra DMA Mode

This option allows the user to select Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

### Parallel ATA

This setting allows the user to enable or disable the function of Parallel ATA. The options are Disabled, **Channel 0**, Channel 1, and Both.

### Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled.**

### Native Mode Operation

Select the native mode for ATA. The options are: Parallel ATA, Serial ATA, Both, and **Auto**.

### SATA Controller Mode

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native IDE Mode. (***Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.)**

When the SATA Controller Mode is set to "Enhanced", the following items will display:

### Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (*For the Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select either Intel or Adaptec Host RAID firmware. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

### ICH RAID Code Base

Select Intel to enable Intel's SATA RAID firmware. Select Adaptec to use Adaptec's HostRAID firmware. The options are **Intel** and Adaptec**.**

### SATA AHCI

Select Enable to enable the function of Serial ATA Advanced Host Interface. (*Take caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

### System Memory

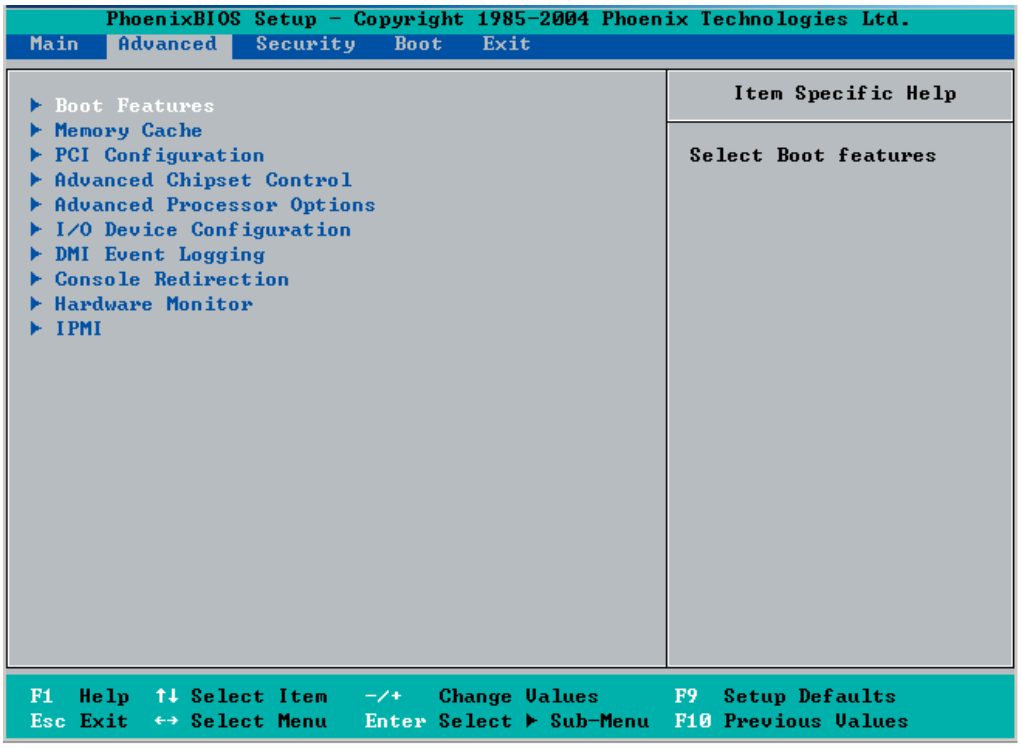
This display informs you how much system memory is recognized as being present in the system.

### Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

## 7-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.



## ▶Boot Features

Access the submenu to make changes to the following settings.

### Quick Boot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

### Quiet Boot

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

### POST Errors

Set to **Enabled** to display POST Error Messages if an error occurs during bootup. If set to Disabled, the system will continue to boot without displaying any error message even when a boot error occurs.

### ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

### Power Button Behavior

If set to **Instant-Off**, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are instant-off and 4-sec override.

### Resume On Modem Ring

Select On to “wake your system up” when an incoming call is received by your modem. The options are On and **Off**.

### Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On, and **Last State**.

### Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

### Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

## ▶Memory Cache

### Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable this function, and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

### Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable the function and this area will be reserved for Video BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

### Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations . Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

### Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations . Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 512-640K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

### Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM)

or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

### Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

### ▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

### Onboard GLAN1/Onboard GLAN2 (Gigabit- LAN) OPROM Configure

Enabling this option provides the capability to boot from GLAN. The options are **Disabled** and Enabled.

### PCI Parity Error Forwarding

The feature allows SERR and PERR errors detected in PCI slots to be sent (forwarded) to the BIOS DMI Event Log for the user to review. The options are Enabled and **Disabled**.

### Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

### Frequency for PCI-X#5-#6

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

### ▶Slot1 PCI 33MHz, Slot2 PCI 33MHz, Slot3 PCI-Exp x8, Slot4 PCI-Exp x4, Slot5 PCI-X 133MHz, Slot6 PCI-X 133MHz

Access the submenu for each of the settings above to make changes to the following:

#### Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

#### Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

#### Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

### Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are **DOS** or Other (for Unix, Novelle NetWare and other operating systems).

### ▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

**Warning**: Take Caution when changing the Advanced settings. Incorrect values entered may cause system malfunction. Also, a very high DRAM frequency or incorrect DRAM timing may cause system instability. When this occurs, revert to the default setting.

### SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit, and Both.

### 4GB PCI Hole Granularity

This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

### Memory Branch Mode

This option determines how the memory branch operates. System address space can either be interleaved between two channels or Sequential from one channel to another. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Interleave**, Sequential and Single Channel 0.

### Branch 0 Rank Sparing

Select enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and **Disabled**.

### Enhanced x8 Detection

Select **Enabled** to enable Enhanced x8 DRAM UC Error Detection. The options are Disabled and **Enabled**.

### Crystal Beach Features

This feature cooperates with Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (*Note: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the ESB 2 South Bridge chip.) The options are **Enabled** and Disabled.

### Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are Disabled, PCI and **LPC**.

### Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

### Enabling Multi-Media Timer

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for the OS use. The options are Yes and **No**.

### USB Function

Select Enabled to enable the function of USB devices specified. The settings are **Enabled** and Disabled.

### Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

## ▶Advanced Processor Options

Access the submenu to make changes to the following settings.

### CPU Speed

This is a display that indicates the speed of the installed processor.

### Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default,** x12, x13, x14, x15, x16, x17 and x18.

### Hyperthreading (Available when supported by the CPU.)

Set to Enabled to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

### Core-Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

### Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

### Thermal Management 2 (Available when supported by the CPU.)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

### C1 Enhanced Mode (Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (Please refer to Intel's web site for detailed information.)

### Execute Disable Bit (Available when supported by the CPU and the OS.)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

Note: this feature is available when your OS and your CPU support the function of Execute Disable Bit. The options are **Disabled** and Enabled. (For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.)

### Adjacent Cache Line Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

### Hardware Prefetcher (Available when supported by the CPU.)

Set to this option to **enabled** to enable the hardware components that are used in conjunction with software programs to prefetch data in order to shorten execution cycles and maximize data processing efficiency. The options are Disabled and **Enabled**.

### Intel <R> Virtualization Technology (Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

### Intel EIST Support (Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. **Please refer to Intel's web site for detailed information.**

### ▶I/O Device Configuration

Access the submenu to make changes to the following settings.

### KBC Clock Input

This setting allows you to select clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz,** and 16MHz.

### Serial Port A

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

### Base I/O Address

This setting allows you to select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8, and 2E8.

### Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

### Serial Port B

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

### Mode

This setting allows you to set the type of device that will be connected to serial port B. The options are **Normal** and IR (for an infrared device).

### Base I/O Address

This setting allows you to select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

### Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port B. The options are **IRQ3** and IRQ4.

### Parallel Port

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS-or OS- controlled).

### Base I/O Address

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

### Interrupt

This setting allows you to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

### Mode

This feature allows you to specify the parallel port mode. The options are Output only, Bi-Directional, EPP and **ECP**.

### DMA Channel

This item allows you to specify the DMA channel for the parallel port. The options are DMA1 and **DMA3**.

### Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

### Base I/O Address

This setting allows you to select the base I/O address for the Floppy port. The options are **Primary** and Secondary.

## ▶DMI Event Logging

Access the submenu to make changes to the following settings.

### Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

### Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

### View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

### Event Logging

This setting allows you to **Enable** or Disable event logging.

### ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

### Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

### Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

## ▶Console Redirection

Access the submenu to make changes to the following settings.

### COM Port Address

This item allows you to specify to redirect the console to Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

### BAUD Rate

This item allows you to select the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

### Console Type

This item allows you to choose from the available options to select the console type for console redirection. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, and VT-UTF8.

### Flow Control

This item allows you to choose from the available options to select the flow control for console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

### Console Connection

This item allows you to choose select the console connection: either **Direct** or Via Modem.

### Continue CR after POST

Choose whether to continue with console redirection after the POST routine. The options are On and **Off**.

## ▶Hardware Monitor Logic

**Note:** The Phoenix BIOS will automatically detect the type of CPU(s) and hardware monitoring chip used on the motherboard and will display the Hardware Monitoring Screen accordingly. Your Hardware Monitoring Screen may look like the one shown on this page, on p. 7-19 or on p. 7-20, depending on the type of CPU(s) and HW Monitoring chip you are using.

### CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70°C, 75°C, **80°C** and 85°C.

Highlight this and hit <Enter> to see monitor data for the following items:

**CPU1 Temperature**

**CPU1 Second Core**

**CPU2 Temperature**

**CPU2 Second Core**

**System Temperature**

**Fan1-Fan6 Speeds**: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to "3-pin fan", the fan speed is controlled by voltage. If the option is set to "4-pin", the fan speed will be controlled by Pulse Width Modulation (PWM). Select "3-pin" if your chassis came with 3-pin fan headers. Select "4-pin" if your chassis came with 4-pin fan headers. Select "Workstation" if your system is used as a Workstation. Select "Server" if your system is used as a Server. Select "Disable" to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all the time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

### Voltage Monitoring

The following items will be monitored and displayed:
P12V_VR0, P12V_VR1
FSB VTT
PXH Vcore
ES2B Vcore
CPU1Vcore
CPU2Vcore
P3V3

## ▶Hardware Monitor Logic

### CPU Temperature Threshold (See Note on previous page.)

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70°C, 75°C, **80°C** and 85°C.

Highlight this and hit <Enter> to see monitor data for the following items:

**CPU1 Temperature**

**CPU1 Second Core**

**CPU2 Temperature**

**CPU2 Second Core**

**System Temperature**

**Fan1-Fan8 Speeds**: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to "3-pin fan", the fan speed is controlled by voltage. If the option is set to "4-pin", the fan speed will be controlled by Pulse Width Modulation (PWM). Select "3-pin" if your chassis came with 3-pin fan headers. Select "4-pin" if your chassis came with 4-pin fan headers. Select "Workstation" if your system is used as a Workstation. Select "Server" if your system is used as a Server. Select "Disable" to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all the time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

### Voltage Monitoring

The following items will be monitored and displayed:

Vcore A
Vcore B
-12V
P1V5
+3.3V
+12V
5Vsb
5VDD
P_VTT
Vbat

## ▶Hardware Monitor Logic (see Note on page 7-18.)

### CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The hardcode default setting is **75°C**.

### Temperature Monitoring (Available if supported by the CPU)

Highlight this and hit <Enter> to see monitor data for the following PECI (Platform Environment Control Interface) items:

**CPU1 Temperature/CPU1 Second Core**

**CPU2 Temperature/CPU2 Second Core**

**PECI Agent 1 Temperature**

**PECI Agent 2 Temperature**

**PECI Agent 3 Temperature**

**PECI Agent 4 Temperature**

**System Temperature**

**Fan1-Fan8 Speeds**: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

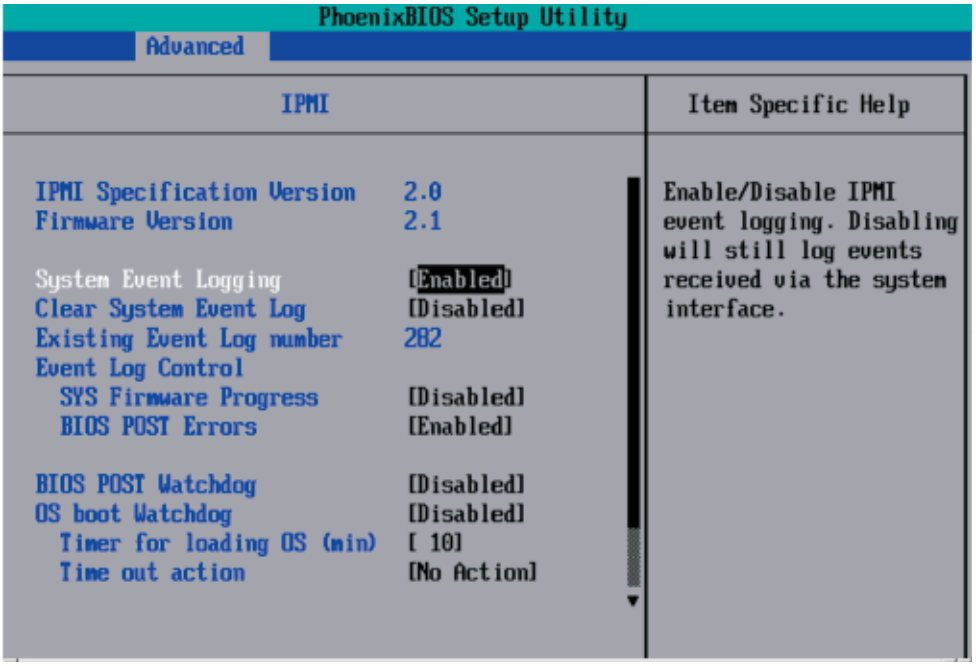
**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to “3-pin fan”, the fan speed is controlled by voltage. If the option is set to “4-pin”, the fan speed will be controlled by Pulse Width Modulation (PWM). Select “3-pin” if your chassis came with 3-pin fan headers. Select “4-pin” if your chassis came with 4-pin fan headers. Select “Workstation” if your system is used as a Workstation. Select “Server” if your system is used as a Server. Select “Disable” to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all the time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

### Voltage Monitoring

The following items will be monitored and displayed:
Vcore A, Vcore B:
-12V
P1V2_NIC_SEN
+3.3V
+12V
5Vsb
5VDD
P_VTT
Vbat

**▶IPMI (The option is available only when an IPMI card is installed in the system.)**




**IPMI Specification Version:** This item displays the current IPMI Version.

**Firmware Version:** This item displays the current Firmware Version.

### System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

### Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

### Existing Event Log Number

This item displays the number of the existing event log.

### Event Log Control

#### System Firmware Progress

Enabling this function to log POST progress. The options are Enabled and **Disabled**.

#### BIOS POST Errors

Enabling this function to log POST errors. The options are Enabled and **Disabled**.

#### BIOS POST Watch Dog

Set to Enabled to enable POST Watch Dog. The options are Enabled and **Disabled**.

**OS Boot Watch Dog**

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

**Timer for Loading OS (Minutes)**

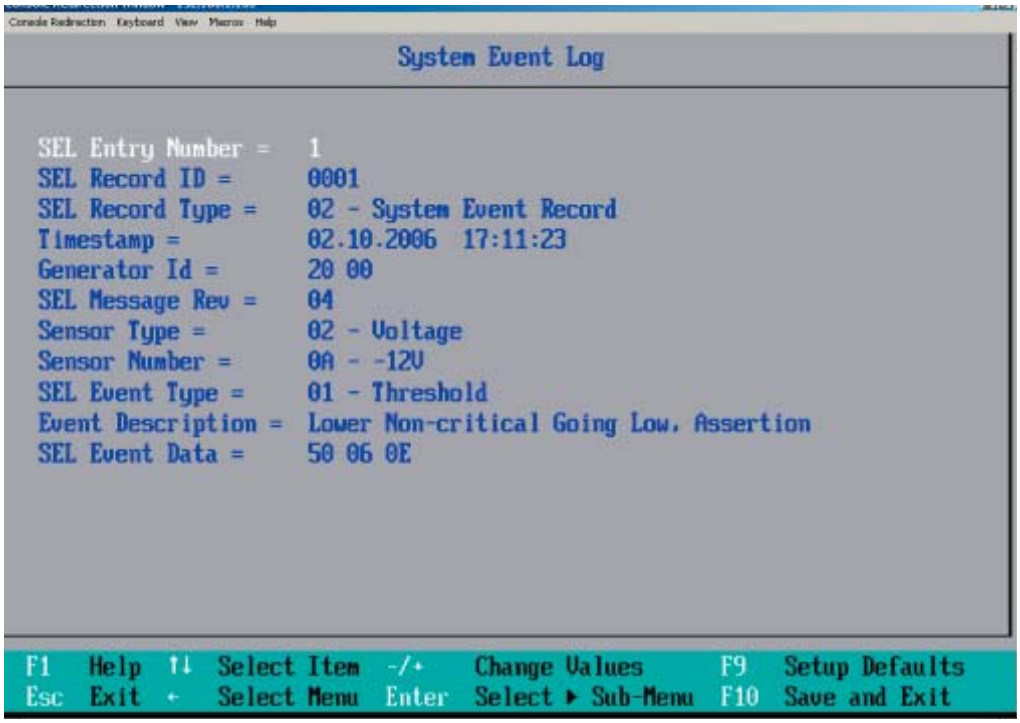
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

**Time Out Option**

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action, Reset, Power Off and Power Cycles.**

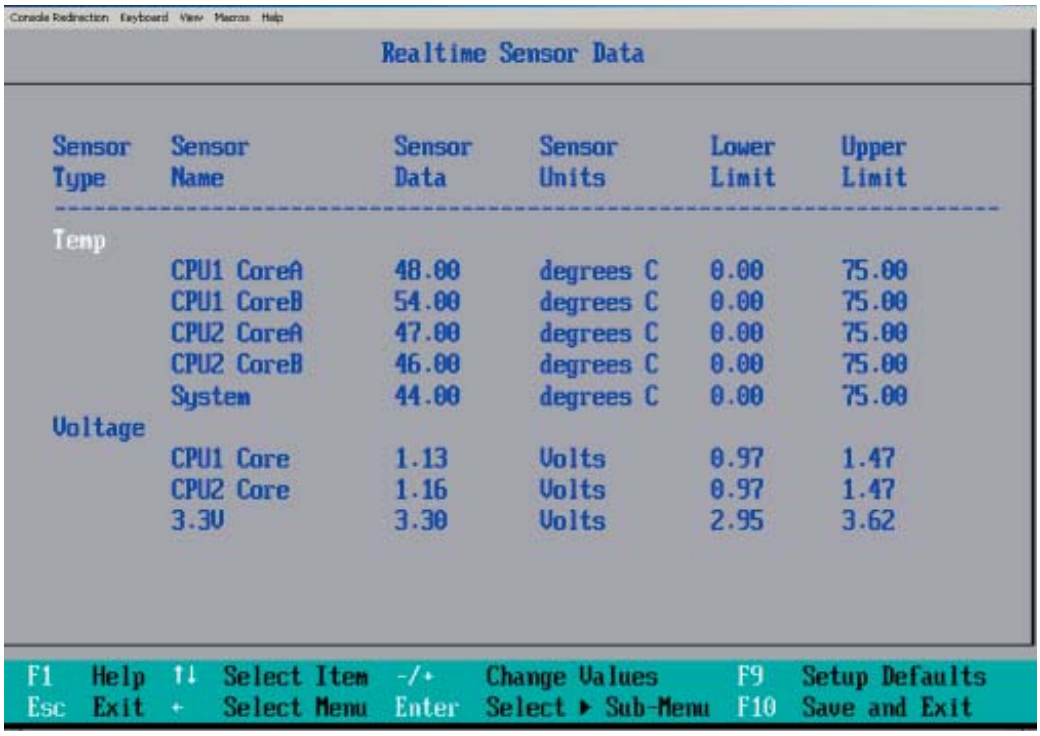
## ▶System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.



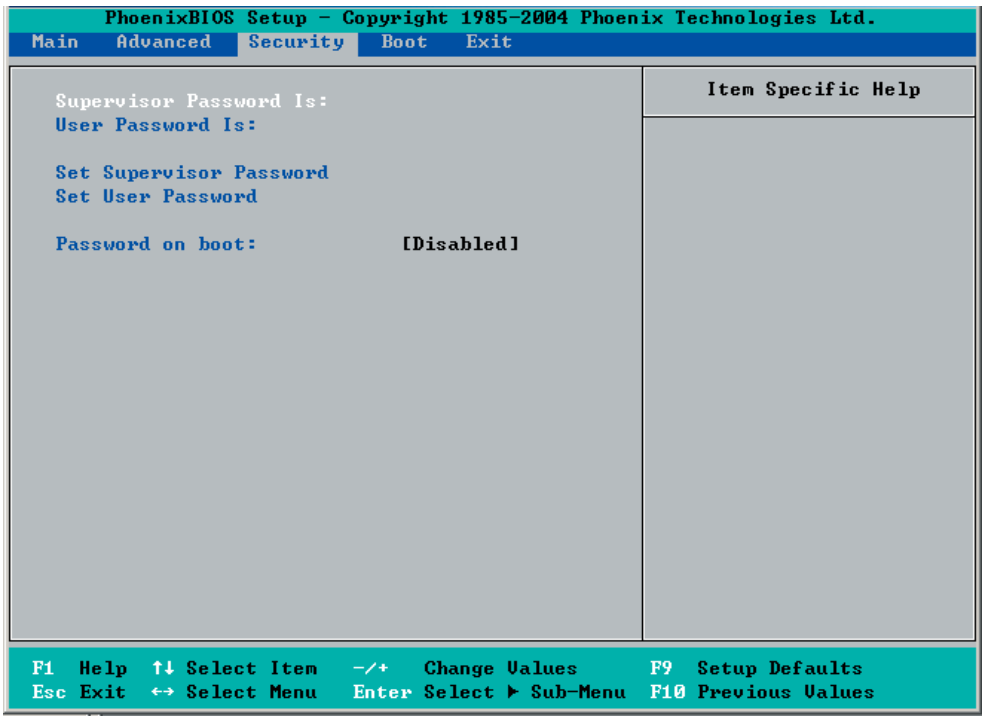
## ▶Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.



## 7-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.




### Supervisor Password Is:

This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

### User Password Is:

This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

### Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

### Set User Password

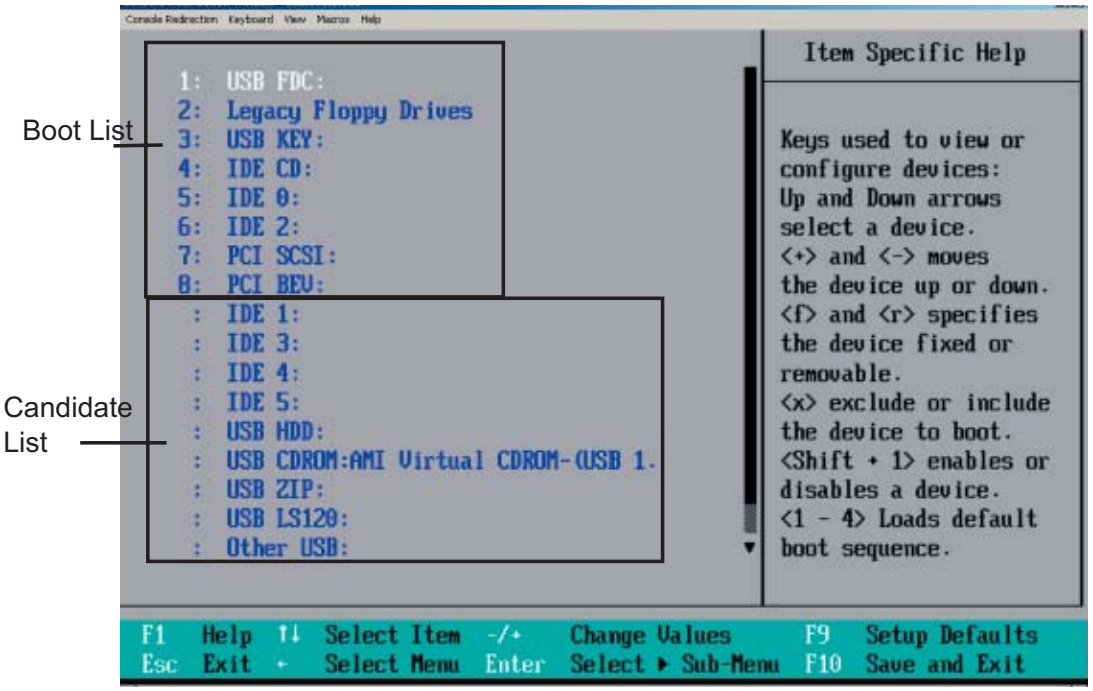
When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

### Password on Boot

This setting allows you to require a password to be entered when the system boots up. The options are **Enabled** (password required) and Disabled (password not required).

## 7-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

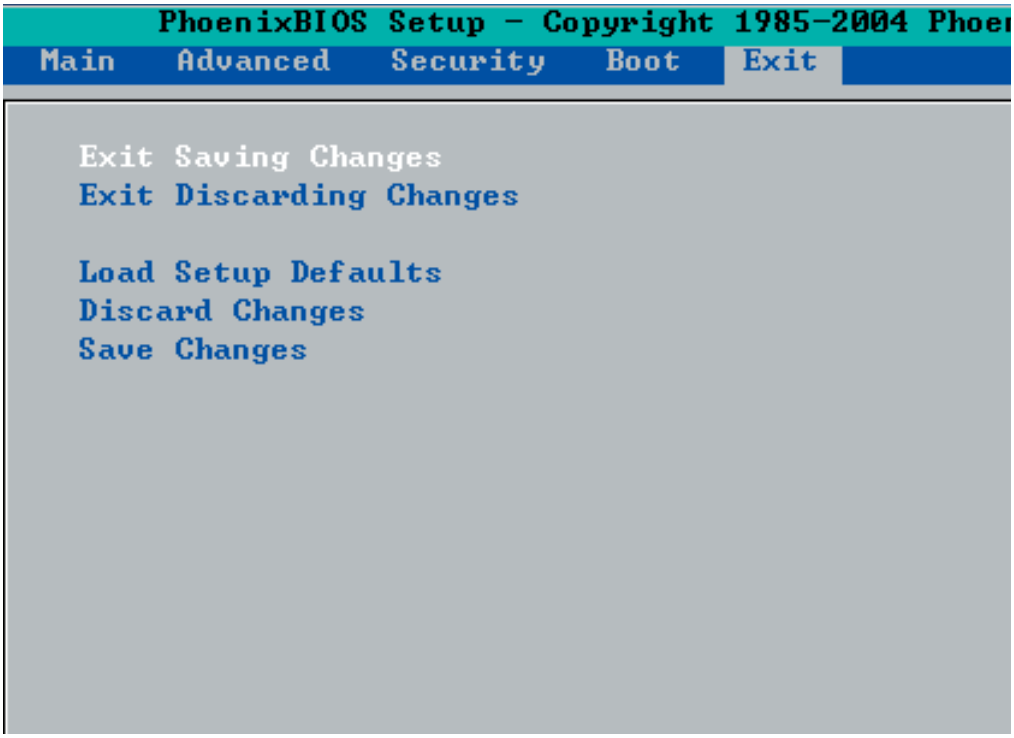



### Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

## 7-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.




### Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

### Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

### Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

### Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

### Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

# Appendix A

# BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

**Failure Fixed Disk**
Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

**Stuck key**
Stuck key on keyboard.

**Keyboard error**
Keyboard not working.

**Keyboard Controller Failed**
Keyboard controller failed test. May require replacing keyboard controller.

**Keyboard locked - Unlock key switch**
Unlock the system to proceed.

**Monitor type does not match CMOS - Run SETUP**
Monitor type not correctly identified in Setup

**Shadow Ram Failed at offset: nnnn**
Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

**System RAM Failed at offset: nnnn**
System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

**Extended RAM Failed at offset: nnnn**
Extended memory not working or not configured properly at offset **nnnn.**

**System battery is dead - Replace and run SETUP**
The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

**System CMOS checksum bad - Default configuration used**

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

**System timer error**

The timer test failed. Requires repair of system board.

**Real time clock error**

Real-Time Clock fails BIOS hardware test. May require board repair.

**Check date and time settings**

BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

**Previous boot incomplete - Default configuration used**

Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

**Memory Size found by POST differed from CMOS**

Memory size found by POST differed from CMOS.

**Diskette drive A error**

Drive A: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

**Incorrect Drive A type - run SETUP**

Type of floppy drive A: not correctly identified in Setup.

**System cache error - Cache disabled**
RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

**CPU ID:**
CPU socket number for Multi-Processor error.

**EISA CMOS not writeable**
ServerBIOS2 test error: Cannot write to EISA CMOS.

**DMA Test Failed**
ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

**Software NMI Failed**
ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

**Fail-Safe Timer NMI Failed**
ServerBIOS2 test error: Fail-Safe Timer takes too long.

**device Address Conflict**
Address conflict for specified **device.**

**Allocation Error for: device**
Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

**CD ROM Drive**
CD ROM Drive identified.

**Entering SETUP ...**
Starting Setup program

**Failing Bits: nnnn**
The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

**Fixed Disk n**
Fixed disk **n** (0-3) identified.

**Invalid System Configuration Data**
Problem with NVRAM (CMOS) data.

**I/O device IRQ conflict**
I/O device IRQ conflict error.

**PS/2 Mouse Boot Summary Screen:**
PS/2 Mouse installed.

**nnnn kB Extended RAM Passed**
Where **nnnn** is the amount of RAM in kilobytes successfully tested.

**nnnn Cache SRAM Passed**
Where **nnnn** is the amount of system cache in kilobytes successfully tested.

**nnnn kB Shadow RAM Passed**
Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

**nnnn kB System RAM Passed**
Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

**One or more I2O Block Storage Devices were excluded from the Setup Boot Menu**
There was not enough room in the IPL table to display all installed I2O block-storage devices.

**Operating system not found**
Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

**Parity Check 1 nnnn**
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

**Parity Check 2 nnnn**
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.**

**Press <F1> to resume, <F2> to Setup, <F3> for previous**
Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

**Press <F2> to enter Setup**
Optional message displayed during POST. Can be turned off in Setup.

**PS/2 Mouse:**
PS/2 mouse identified.

**Run the I2O Configuration Utility**
One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

**System BIOS shadowed**
System BIOS copied to shadow RAM.

**UMB upper limit segment address: *nnnn***
Displays the address ***nnnn*** of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

**Video BIOS shadowed**
Video BIOS successfully copied to shadow RAM.

# Notes

# Appendix B

# BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

## Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error
1 repetitive long beep - no memory detected

## Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen. The following is a list of codes that may be written to port 80h.

| POST Code | Description |
|---|---|
| 01h | IPMI Initialization |
| 02h | Verify Real Mode |
| 03h | Disable Non-Maskable Interrupt (NMI) |
| 04h | Get CPU type |
| 06h | Initialize system hardware |
| 07h | Disable shadow and execute code from the ROM. |
| 08h | Initialize chipset with initial POST values |
| 09h | Set IN POST flag |
| 0Ah | Initialize CPU registers |
| 0Bh | Enable CPU cache |
| 0Ch | Initialize caches to initial POST values |
| 0Eh | Initialize I/O component |
| 0Fh | Initialize the local bus IDE |
| 10h | Initialize Power Management |
| 11h | Load alternate registers with initial POST values |
| 12h | Restore CPU control word during warm boot |
| 13h | Reset PCI Bus Mastering devices |
| 14h | Initialize keyboard controller |
| 16h | 1-2-2-3 BIOS ROM checksum |
| 17h | Initialize cache before memory Auto size |

| POST Code | Description |
|---|---|
| 18h | 8254 timer initialization |
| 1Ah | 8237 DMA controller initialization |
| 1Ch | Reset Programmable Interrupt Controller |
| 20h | 1-3-1-1 Test DRAM refresh |
| 22h | 1-3-1-3 Test 8742 Keyboard Controller |
| 24h | Set ES segment register to 4 GB |
| 28h | Auto size DRAM |
| 29h | Initialize POST Memory Manager |
| 2Ah | Clear 512 kB base RAM |
| 2Ch | 1-3-4-1 RAM failure on address line ***xxxx**** |
| 2Eh | 1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus |
| 2Fh | Enable cache before system BIOS shadow |
| 32h | Test CPU bus-clock frequency |
| 33h | Initialize Phoenix Dispatch Manager |
| 36h | Warm start shut down |
| 38h | Shadow system BIOS ROM |
| 3Ah | Auto size cache |
| 3Ch | Advanced configuration of chipset registers |
| 3Dh | Load alternate registers with CMOS values |
| 41h | Initialize extended memory for RomPilot (optional) |
| 42h | Initialize interrupt vectors |
| 45h | POST device initialization |
| 46h | 2-1-2-3 Check ROM copyright notice |
| 48h | Check video configuration against CMOS |
| 49h | Initialize PCI bus and devices |
| 4Ah | Initialize all video adapters in system |
| 4Bh | QuietBoot start (optional) |
| 4Ch | Shadow video BIOS ROM |
| 4Eh | Display BIOS copyright notice |
| 4Fh | Initialize MultiBoot |
| 50h | Display CPU type and speed |
| 51h | Initialize EISA board (optional) |
| 52h | Test keyboard |
| 54h | Set key click if enabled |
| 55h | Enable USB devices |
| 58h | 2-2-3-1 Test for unexpected interrupts |
| 59h | Initialize POST display service |
| 5Ah | Display prompt “Press <ESC> to enter SETUP” |
| 5Bh | Disable CPU cache |

| POST Code | Description |
|---|---|
| 5Ch | Test RAM between 512 and 640 kB |
| 60h | Test extended memory |
| 62h | Test extended memory address lines |
| 64h | Jump to UserPatch1 |
| 66h | Configure advanced cache registers |
| 67h | Initialize Multi Processor APIC |
| 68h | Enable external and CPU caches |
| 69h | Setup System Management Mode (SMM) area |
| 6Ah | Display external L2 cache size |
| 6Bh | Load custom defaults (optional) |
| 6Ch | Display shadow-area message |
| 70h | Display error messages |
| 72h | Check for configuration errors |
| 76h | Check for keyboard errors |
| 7Ch | Set up hardware interrupt vectors |
| 7Dh | Initialize Intelligent System Monitoring (optional) |
| 7Eh | Initialize coprocessor if present |
| 80h | Disable onboard Super I/O ports and IRQs (optional) |
| 81h | Late POST device initialization |
| 82h | Detect and install external RS232 ports |
| 83h | Configure non-MCD IDE controllers |
| 84h | Detect and install external parallel ports |
| 85h | Initialize PC-compatible PnP ISA devices |
| 86h | Re-initialize onboard I/O ports. |
| 87h | Configure Motherboard Configurable Devices (optional) |
| 88h | Initialize BIOS Data Area |
| 89h | Enable Non-Maskable Interrupts (NMIs) |
| 8Ah | Initialize Extended BIOS Data Area |
| 8Bh | Test and initialize PS/2 mouse |
| 8Ch | Initialize floppy controller |
| 8Fh | Determine number of ATA drives (optional) |
| 90h | Initialize hard-disk controllers |
| 91h | Initialize local-bus hard-disk controllers |
| 92h | Jump to UserPatch2 |
| 93h | Build MPTABLE for multi-processor boards |
| 95h | Install CD ROM for boot |
| 96h | Clear huge ES segment register |
| 97h | Fix up Multi Processor table |
| 98h | 1-2 Search for option ROMs and shadow if successful. One long, two short beeps on checksum failure |

| POST Code | Description |
|---|---|
| 99h | Check for SMART Drive (optional) |
| 9Ch | Set up Power Management |
| 9Dh | Initialize security engine (optional) |
| 9Eh | Enable hardware interrupts |
| 9Fh | Determine number of ATA and SCSI drives |
| A0h | Set time of day |
| A2h | Check key lock |
| A4h | Initialize typematic rate |
| A8h | Erase <ESC> prompt |
| AAh | Scan for <ESC> key stroke |
| ACh | Enter SETUP |
| AEh | Clear Boot flag |
| B0h | Check for errors |
| B1h | Inform RomPilot about the end of POST (optional) |
| B2h | POST done - prepare to boot operating system |
| B4h | 1 One short beep before boot |
| B5h | Terminate QuietBoot (optional) |
| B6h | Check password (optional) |
| B7h | Initialize ACPI BIOS and PPM Structures |
| B9h | Prepare Boot |
| BAh | Initialize SMBIOS |
| BCh | Clear parity checkers |
| BDh | Display MultiBoot menu |
| BEh | Clear screen (optional) |
| BFh | Check virus and backup reminders |
| C0h | Try to boot with INT 19 |
| C1h | Initialize POST Error Manager (PEM) |
| C2h | Initialize error logging |
| C3h | Initialize error display function |
| C4h | Initialize system error flags |
| C6h | Console redirection init. |
| C7h | Unhook INT 10h if console redirection enabled |
| C8h | Force check (optional) |
| C9h | Extended ROM checksum (optional) |
| CDh | Reclaim console redirection vector |
| D2h | Unknown interrupt |
| D4h | Check Intel Branding string |
| D8h | Alert Standard Format  initialization |
| D9h | Late init for IPMI |
| DEh | Log error if micro-code not updated properly |

**The following are for boot block in Flash ROM**

| POST Code | Description |
|---|---|
| E0h | Initialize the chipset |
| E1h | Initialize the bridge |
| E2h | Initialize the CPU |
| E3h | Initialize system timer |
| E4h | Initialize system I/O |
| E5h | Check force recovery boot |
| E6h | Checksum BIOS ROM |
| E7h | Go to BIOS |
| E8h | Set Huge Segment |
| E9h | Initialize Multi Processor |
| EAh | Initialize OEM special code |
| EBh | Initialize PIC and DMA |
| ECh | Initialize Memory type |
| EDh | Initialize Memory size |
| EEh | Shadow Boot Block |
| EFh | System memory test |
| F0h | Initialize interrupt vectors |
| F1h | Initialize Run Time Clock |
| F2h | Initialize video |
| F3h | Initialize System Management Manager |
| F4h | Output one beep |
| F5h | Clear Huge Segment |
| F6h | Boot to Mini DOS |
| F7h | Boot to Full DOS |

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (***xxxx***) indicating the address line or bits that failed. For example, “2C 0002” means address line 1 (bit one set) has failed. “2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

# Notes

# Appendix C

# Software Installation

## C-1 Installing Drivers

After you've installed Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.

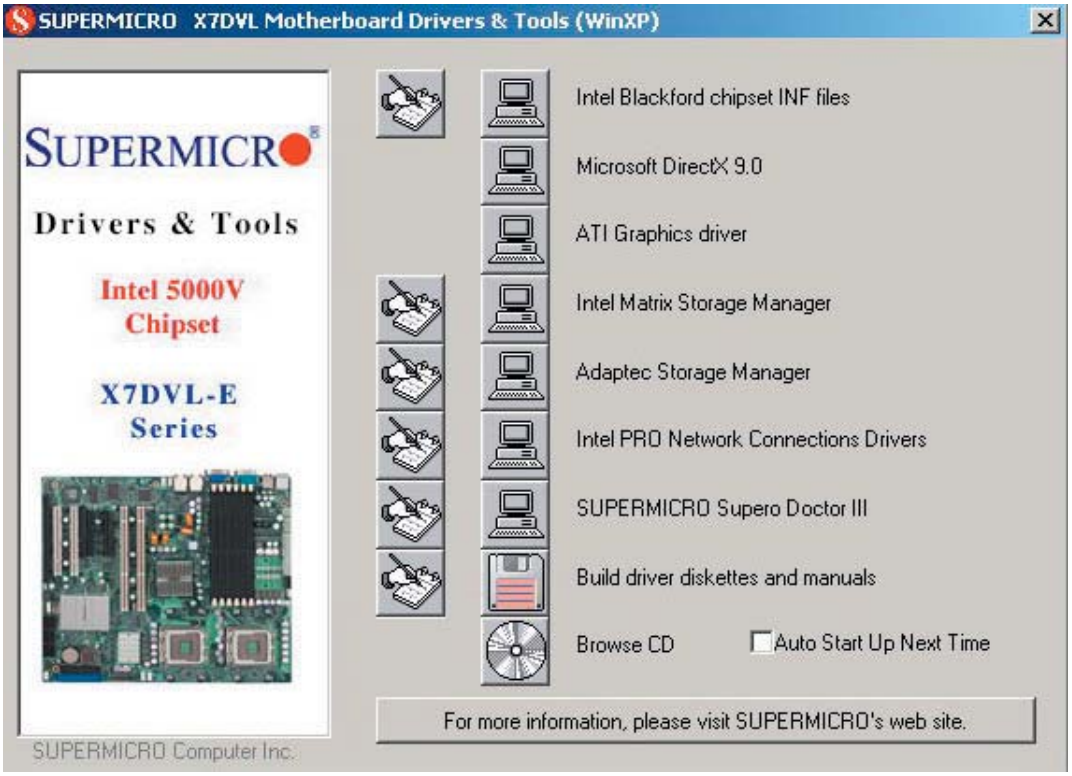



**Figure C-1. Driver Installation Screen**

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** You should install everything here except for the SUPER Doctor utility, which is optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

## C-2 Configuring SuperDoctor III

The Supero Doctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

**Note:** The default User Name/Password for SuperDoctor III is ADMIN / ADMIN.

**Figure C-2. SuperDoctor: Health Information Screen**

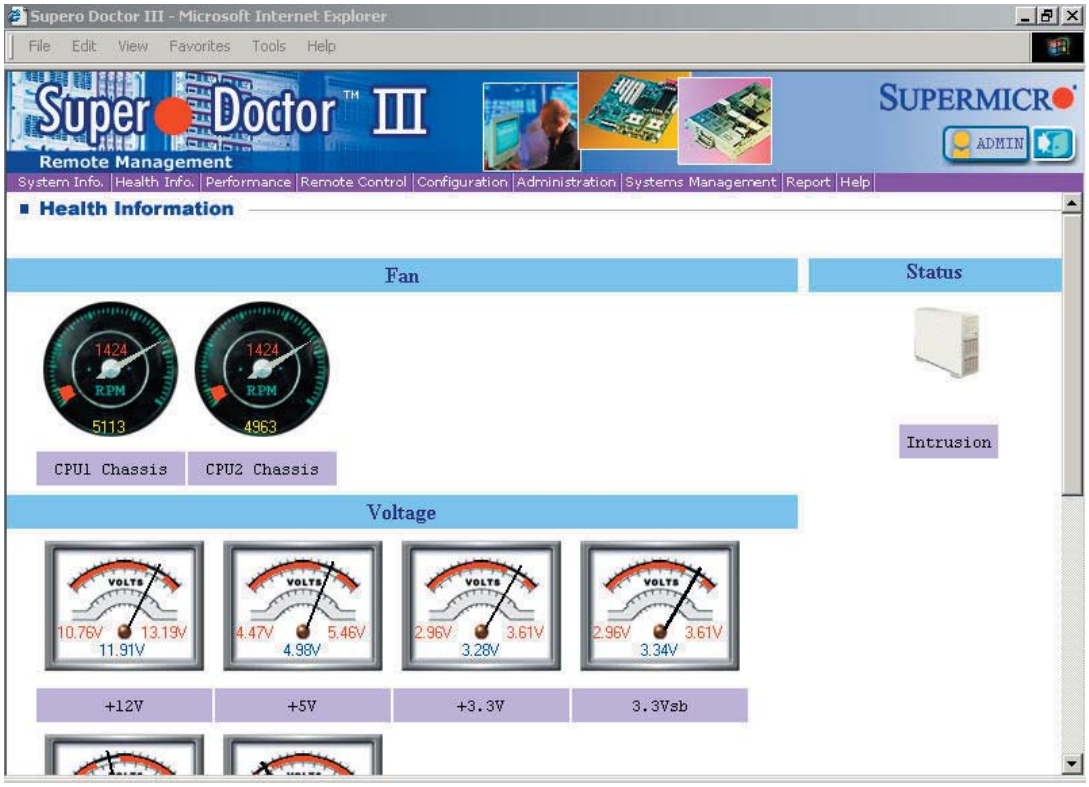


**Figure C-3. SuperDoctor: Remote Control Screen**


Note: SD III Software can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.

# Notes

# Appendix D

# System Specifications

### Processors
6015V-MR: Single or dual Intel® Xeon® 5100/5000 series processors
6015V-MRLP: Single or dual Intel® Xeon® 5100 series processors

### Chipset
Intel 5000V/ESB2

### BIOS
8 Mb Phoenix® flash ROM

### Memory Capacity
Four (4) 240-pin DIMM sockets to support a maximum of 16 GB of ECC FBD DDR2-667/533 memory

**Note: memory modules should be the same size, speed and type and must be installed in pairs**

### Serial ATA Controller
On-chip ESB2 controller

### Peripheral Bays
One (1) slim DVD-ROM drive

### PCI Expansion Slots
One (1) 64-bit 133/100 MHz (3.3V) PCI slot (riser card included)

### Serverboard
Model: X7DVL-E (ATX Form Factor)
Dimensions: 12 x 10 in (305 x 254 mm)

### Chassis
6015V-MR: SC512F-520, Mini 1U rackmount
6015V-MRLP: SC512F-280, Mini 1U rackmount
Dimensions (both): (WxHxD) 17.3 x 1.7 x 14.5 in. (439 x 43 x 368 mm)

### Weight
Gross Weight: 18 lbs. (8.2 kg.)

### System Cooling

6015V-MR: Three (3) 4-cm counter-rotating fans (FAN-0087)
6015V-MRLP: Two (2) 4-cm counter-rotating fans (FAN-0087)

### System Input Requirements: 6015V-MR

AC Input Voltage: 100-240 VAC
Rated Input Current: 7A ~ 3A max. (100-240V)
Rated Input Frequency: 50 to 60 Hz

### Power Supply: 6015V-MR

Rated Output Power: 520W (Part# PWS-521-1H)
Rated Output Voltages: +3.3V (16A), +5V (20A), $+12V_{ALL}$ (39A), -12V (0.5A), +5Vsb (3A)

### System Input Requirements: 6015V-MRLP

AC Input Voltage: 100-240 VAC
Rated Input Current: 5A max. (100-240V)
Rated Input Frequency: 50 to 60 Hz

### Power Supply: 6015V-MRLP

Rated Output Power: 280W (Part# PWS-281-1H)
Rated Output Voltages: +3.3V (15A), +5V (18A), $+12V_{ALL}$ (23A), -12V (0.5A), +5Vsb (2A)

### BTU Rating

2745 BTUs/hr (for rated output power of 520W)
1478 BTUs/hr (for rated output power of 280W)

### Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

## Regulatory Compliance

Electromagnetic Emissions:
FCC Class B, EN 55022 Class B, EN 61000-3-2/-3-3, CISPR 22 Class B

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4,
EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant
UL Listed (USA)
CUL Listed (Canada)
TUV Certified (Germany)
CE Marking (Europe)

# Notes